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Computer Weekly

Thursday, June 24, 1982

ICL moves into fifth generation CAFS language

by Philip Hunter
ICL looks set to move into the fifth generation of computers with an investment in the new family of relational or logic programming languages. It is investigating the use of Prolog for its Contents Addressable File Storage (CAFS) controller, which enables selected data to be retrieved from a base at disc transfer speed.

Talks are taking place this week between an ICL development team involved with CAFS and the Imperial College team which developed the version of Prolog ICL is interested in.

Although ICL's immediate interest in Prolog is for CAFS, Robert Kowalski, who led the Imperial College team, says that it is pursuing logic programming languages in a far wider context.

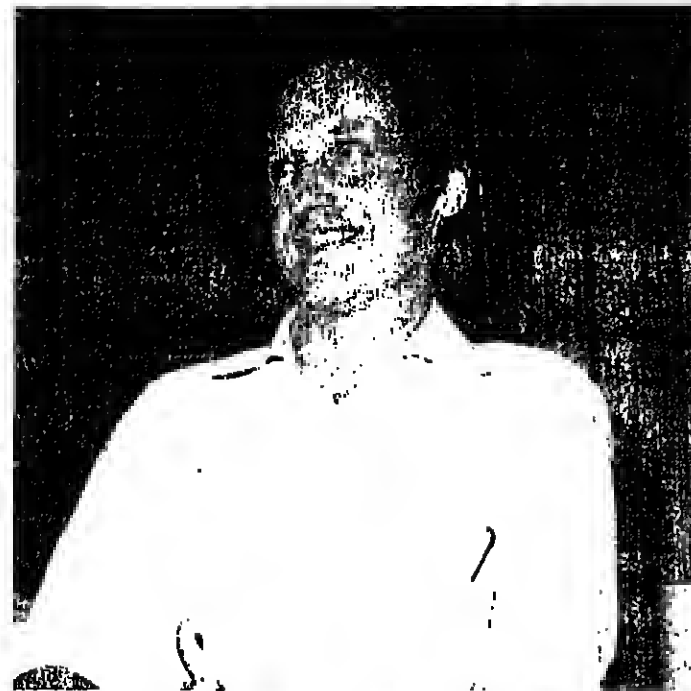
ICL's interest in Prolog is not

surprising. The Japanese Fifth Generation Computer Systems (FGCS) project has decided to base its languages around logic programming. At the same time, ICL is basing much of its fifth generation strategy around a mainframe made by Japanese company Fujitsu.

The Imperial College Prolog is one of the most advanced logic programming languages, having already been used for various research applications.

It has been used to write a commercial spare parts program at Warwick University, and Logicom in the US has used it for military research.

"The whole of Silicon Valley is getting interested in Prolog after years of neglect," says Kowalski, adding that a Logic Programming journal is being set up in the US.



KOWALSKI... "The whole of Silicon Valley is becoming interested in Prolog."

Implementation on CAFS would, however, give Prolog its baptism into the worldwide commercial marketplace. For this reason Kowalski and his colleagues clearly find it hard to restrain their excitement at the prospect of their faith in Prolog's fifth generation potential proving justified.

Only about eight CAFS controllers have so far been sold, but the product is admired even by ICL's rivals.

University sets up in business

by Philip Hunter
IN the hope of beating draconian budget cuts, Salford University Computing Laboratory is launching a campaign to market software and consultancy services in the UK and US.

Other university computer departments have existing commercial ventures, but it is felt that there will have to be more active marketing like Salford's if some of them are to survive.

Salford has already taken six firm orders for its Prime Fortran 77 compiler, which it claims is six times faster than Prime's proprietary version.

Several US companies have offered to market the compiler there, and Salford Computing Laboratory director John Larmonth says he will be disappointed if 40 are not sold in the first year at £2,000 for a single licence.

The compiler was developed at Salford for teaching purposes and has been in use for a year. Prime says it is currently being evaluated in the US for possible worldwide adoption. "It must have some worth or we would not have been evaluating it," admits a Prime UK spokeswoman.

Several of the Salford team privately believe that American reluctance to buy British may be hindering the campaign to get Prime to support the compiler worldwide.

The official reason for any delay is that the Salford compiler may not fit in with plans Prime has to introduce a new hardware architecture. With a new Fortran standard likely to be announced soon, some credence can be given to such a view.

Copyright row over BetaBasic

by Maggie McLaughlin
METACOMCO, the company formed to market the BetaBasic interpreter after the original author went into liquidation, has discovered that it does not have exclusive rights to the software. It will have to pay royalties to its original author.

Welsh software house Microdia was put into the hands of its receiver in March, after struggling to produce a commercial version of a Basic compiler supplied by Cambridge-based Teltec. The creditors' meeting held in April, dissatisfied with Green Health Authority mentioned Nigel Day, a software engineer employed by rival Cambridgeware house Tepepress, had been in contact and might have a claim to BetaBasic.

Accountants Derek Budge and Peter Macdonald bought all rights to the product from Microdia for £20,000, then set up MicroComCo to continue the development and eventually market the finished version. However, the wife team Hugh and Kate Houson-Allen, who formed Microdia, claimed that only distribution rights had been purchased. A couple have now set up a new company, Trevis Technology, to market the Sirius microcomputer.

According to Day, the code of the BetaBasic interpreter which was supplied to Microdia by Teltec had been stolen by left of Teltec's premises. Day had been asked to supply a test version of the product for demonstration purposes.

"I went back later and was sure that all the sources had been deleted," said Day.

SEL claims big lead in supermini power stakes

"ASTONISHING" is the immediate term used by supermini vendor Gould SEL to describe the performance of a new machine launched to keep industry giant Digital Equipment Corp at bay and steal a march on its perennial competitor, Perkin-Elmer Data Systems.

Called the Concept 32/8780, the new machine added to Gould SEL's 32-bit armoury is said to execute unoptimised Fortran at a rate of more than 6.6 million Whetstone instructions per second (MWhet/sec) running the Whetstone scientific benchmark programs.

But careful cleaning up of processor intensive Fortran sequences by a programmer using a software tool called the Optimizing Instrumenter accelerates the execution rate to a claimed 17.5 MWhet/sec, and this is the main justification for Gould SEL's hypebole.

Spokesman Michael Cox, at the company's headquarters at Fort Lauderdale, Florida, adds his own exotic mixed metaphor. "We've blown the performance horse race out of the water."

The Optimizing Instrumenter is already available on the existing top end Gould SEL machine, the 32/87, launched early last year. The 32/87 also shares the use of high speed emitter coupled logic components with the new 32/8780. But the new machine outperforms the 32/87 almost two-fold because it comes with a second processor designated the Internal Processing Unit, IPU.

Providing the same power as the CPU, the IPU handles compute bound tasks while the CPU takes care of I/O and interrupt handling. However, customers itching for the 32/8780's performance will have to wait at least £200,000 for a basic configuration with no peripherals and only two Mbytes of main memory. In contrast, less than £100,000 will buy a two Mbyte P-E 3230 with trimmings like an 80Mbyte disc drive and a 7.5 ips tape unit according to P-E's product marketing manager, Fred Mascarenhas.

Mascarenhas agrees that P-E competes head on with Gould SEL in the latter's key markets, aircraft and nuclear power plant simulation, but points to the wider markets addressed by P-E.

For the uninitiated the Fortran benchmark is a suite of programs designed to measure the performance of a computer in scientific type applications. The performance rating — is calculated by dividing the number of seconds it takes to run the benchmark code by the estimated number of machine level instructions down to which the benchmark was compiled.

UK must wait for the US reductions

IBM cuts disc drive price 30%

by Kevan Pearson
IBM last week slashed the prices of its 3350 disc drives in the US by up to 30%, but UK users will have to wait for any savings. The company is offering volume procurement agreements (VPA) on 3350s, with discounts ranging from 10% to 30%.

The company is also in full production with its long-delayed 3380 large scale drive, and delivery schedules are on 30 days, according to some industry observers. John Fuller, a director of leasing company PCML, says the discounts and delivery schedules indicate that IBM has finally sorted out its production problems on the 3380. He adds that IBM has probably cut the price of the 3350 because it over-produced the 3350

to compensate for the non-appearance of its larger cousin.

Fuller added that although the discounts had not been repeated in Europe users could still get cheap disc storage by importing the 60 cycle machines from the US and buying a cycle converter for about £7,000.

Parry Mitchell, the chairman of United Computing, said: "3380s are being delivered fast, and they work; no head crashes." He said this indicated that IBM wanted to move a lot of 3350s quickly.

The size of the discounts on the 3350 and the speed of delivery on the 3380 have taken the industry by surprise. Thirty per cent is the highest discount under a VPA which IBM offers.

George Goodwin, of the IBM Computer Users Association, said that the CUA had heard of no plans to introduce the scheme into Europe. However, the usual pattern of IBM announcements is that Europe lags behind the US by about two months, except on the launch of large-scale computers, where the announcement is made worldwide, he said.

He was surprised at the size of the discount, especially since the market in 3350s, and their plug-compatible counterparts had been buoyant. "IBM could probably sell this without the discount," he said.

IBM plans to launch the 3380 into the UK in August, after a delay of over a year, and the numbers shipped so far in the US, 1,500 according to IBM's chief executive John Opel, indicate that deliveries will be on schedule.

Compec goes to Wales

REGIONALISATION of the UK's premier computer show, Compec, is gathering pace. The first Compec Wales has now been scheduled for March 22-24, 1983. It joins Compec Scotland and Compec North as the major UK spin-offs of the annual Compec show held at Olympia in London.

All four shows are sponsored by Computer Weekly. The decision to start up Compec in Wales is based on the strong following the show has rapidly gained in both Wales and Scotland.

Compec Wales will be held in the Great Hall at Cardiff University's Students' Union. Space will be limited — there is capacity for a total of 62 stands.

The Compec shows are the key events in the UK to bring together users and suppliers of computers, systems, peripherals and software. For further details of Compec Wales, contact Tony Kynaston, IPC Exhibitions, Surrey House, Throby Way, Sutton, Surrey, SM1 4QQ, tel: 01-643 8040, ext 4893.



GOODWIN... "Europe usually lags behind the US by about two months."

Geisco plans \$60m hardware upgrade

by Robert Parry
GEISCO, software and bureau arm of General Electric in the US, is to spend \$60 million on hardware to upgrade its worldwide remote computing service. This brings General Electric's recent investment in Geisco up to about \$225 million.

Last year Geisco acquired four US software companies for \$90 million and General Electric bought out Honeywell's 15.9% share in Geisco for \$70 million. Two months ago Geisco spent \$5 million on an upgrade to its Mark 3081s.

The new equipment includes 29 Honeywell DPS-8/70 CPUs and 206 8650 disc drives from Storage

Technology. It will replace older systems, based on Honeywell Level 66s, at Geisco "supercentres" in the US and Holland.

The bulk of the machines will go to Cleveland, Ohio, which will take 19 CPUs while the centres in Rockville, Maryland, and in Amsterdam will each get five.

The changesover to the new equipment will be transparent to users of the teleprocessing network, claims Geisco, but will result in greater storage and processing capacity. Users will be able to put bigger programs on the service and see a 40% increase in processing power. System reliability and capacity for users will also be increased.

Ex-employee wins case against CACI

by Boris Sedacca
DATABASE consultancy CACI is beginning to pay the price of its industrial relations policy which has resulted in over 20 staff being fired over the last 12 months.

Sue Yates, wife of ex-Birmingham branch manager of CACI Tony Yates, last week emerged triumphant from a settlement with the company at an industrial tribunal pre-hearing. The company has paid £1,100 in respect of her claim for unfair dismissal and unlawful discrimination, and has supplied her with a reference.

When she had asked for a reference at the time she was fired, it was stated that Ron Steorts, head of CACI's European operations, was refusing to provide references.

NEWS BRIEF

Gestetner to make 500 redundant

GESTETNER, maker of copiers and duplicators, plans to make redundant 500 of the 2,000 staff at its main factory in Tottenham, North London.

The reason is Gestetner's fall in profits for a fourth successive year.

Knight share sale

LEADING supplier of computer staff Knight Computer International hopes to raise £1.5 million on the Stock Exchange by selling nearly 2.5 million shares, which represent 45% of the company's capital.

Sick pay changes

ROYAL assent was given this week to the Department of Health and Security Bill which will bring in new regulations for sickness pay and benefit. From April 1983 employers will be responsible for sickness pay over the first six weeks of an employee's absence. A guide explaining how the new rules will affect payroll systems will be issued in the middle of next month.

Marketing deal

SYSTEMS and peripheral rental specialist Hamilton Rentals has signed a marketing deal with Rascal-Migo to sell modems and multiplexer communications equipment.

£50 machine

WEST LONDON electronics company Binatone is to challenge Sinclair in the personal computer market. It is to launch a machine to sell for less than £50 — undercutting the Sinclair ZX81 — in the autumn.

Britannia, Peachtree sign applications deal

by Claire Gooding
BRITISH micro manufacturer Britannia is moving in on the applications market. Britannia has tied up with Peachtree, probably the largest microsoftware supplier, in a deal which brings Peachtree's financial software on to Britannia's 16-bit Series 3.

CIS Cobol, the micro version of the business language Cobol, from Micro Focus, is also being offered on the Britannia machine, recently launched into a market thick with machines running Unix lookalikes.

Both deals represent a considerable commitment for a company as small as Britannia, even though it has the weight of the Armstrong heavy engineering corporation behind it.

"It means a lot to first-time users when we are willing to commit ourselves to 500 units of Peachtree software," said managing director Geoff Sheridan.

Britannia is already entering for the office revolution under Unix, and plans to write more Unix applications include a joint word processing project with Peachtree.

IBM acts on criticism of top-end machines

by Kevan Pearson
IBM is taking rumours of poor performance on its top systems so seriously that it has produced an internal sales document telling salesmen how to deal with the topic with potential customers.

IBM has repeatedly denied the stories that the 3081 D is not performing at its claimed level, though the rumours continue to circulate. And the company is now facing a very soft order book on the 3081, according to industry sources.

But in New York last week IBM president John Opel told a meeting of analysts that demand for the 3081 was "very strong," and "Our customers are taking all the 3081s we can build."

IBM does not give a figure for machine throughput of the 3081; it only quotes an internal instruction processing rate, and then only in terms of existing machines. Moreover, IBM does not guarantee that a system with a higher internal instruction rating will give a commensurately higher system throughput.

The performance of large systems is extremely variable, because of the difference in the speed of the CPU and the speed of accessing memory. With the 3081 the problem is exacerbated by lack of the appropriate peripherals to drive the system, and the present unavailability of the 3081's native mode operating system —

MVS/Extended Architecture. A third factor complicating performance is the nature of the work load, particularly the interactive workload, using time sharing systems and large teleprocessing networks.

Probably the major problem faced by IBM's European users is the lack of suitable peripherals for the system, principally the high performance 3380 disc drives.

And even when the 3380s begin to arrive they will be in very small numbers, though they will be earmarked for 3081 customers. Logan White, a director of Megaleasing, says: "Only about 12-15% of those expecting 3380s this year will get them."



WHITE... IBM 3380s will be late in arriving.

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'CII-HB will join in campaign to take on Japan and US'

by Jack Gee
JACQUES STERN, newly-appointed chairman of CII-Honeywell Bull, says that France's State-controlled computer maker is ready to co-operate with other European manufacturers to launch products which could compete with Japan and the US.

Stern, whose firm is now 80% State-owned following the purchase of all but 20% of US Honeywell's stake, held out the possibility of reviving the old project for an alliance between Honeywell Bull, Siemens and Philips which was stillborn during the mid-1970s.

He said: "We are prepared to hold talks with the various companies within the European community which are willing to join in a European data processing policy. "But we will not accept discussions which would challenge our leadership and our national independence."

Stern added: "CII-Honeywell

Bull is Europe's best chance. It is the only company capable of ensuring the development of data processing in competition with the Americans and Japanese, because other Common Market firms are coming increasingly under foreign control.

"But nothing is inevitable in industry. Leading edge technology can just as well be French instead of the US or Japan."

Stern recalled that the Japanese government finances half of the country's computer research and the US State Department provides 20% of credits for developing American data processing.

CII-Honeywell Bull, which is awaiting a massive injection of French government funds, could become profitable by increasing its performance at a rate of 20% a year, the company's new chief said.

Stern said he would draw up a strategy for the company's development which would be presented to the government before the end of this year.

He added: "The result of the State's action today cannot be assessed for another 10 years. The French data processing industry has suffered from planning. We have had one plan after another, but we have never had any long-term financial undertaking. A firm is not designed to last for only four or five years."

Stern promised that State funds would not be wasted, adding: "If we cannot master our data processing industry we shall not be able to control our defence, energy, telecommunications and economy."



STERN... "CII-HB is Europe's best chance."

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HEWITT... Proposals fail to meet most complaints.

NCCL, IDPM dismiss govt data protection plans as inadequate

by Sarah Hardcastle
GOVERNMENT proposals for data protection legislation have drawn sharp criticism from leading organisations concerned with the privacy issue.

The strongest attack against the White Paper issued in April comes from the National Council for Civil Liberties. Patricia Hewitt, NCCL general secretary said that proposals covering access to data dealing with individuals would fail to meet most complaints about invasion of privacy.

In a memorandum, the NCCL argues that the proposals do not provide a satisfactory basis for legislation for three reasons. They omit manual systems which, according to NCCL, give rise to the majority of complaints about personal records.

Secondly, all national security systems and many police computerised databanks are exempt, although NCCL emphasises that "police information may, like that held by other systems, be inaccurate, irrelevant, incomplete or out of date".

Thirdly, NCCL believes the new Data Protection Registrar's powers will be far too limited. It does, however, welcome the decision to create a statutory right for individuals to see their own personal records.

Equally critical is the Institute of Data Processing Management, a supporter of the earlier Lindop

recommendations on privacy legislation.

In a paper to the Home Office, secretary general Ted Cluff argues that "The White Paper shows no real commitment to tackling the problems of privacy."

Cluff is particularly concerned that the proposals' requirement to maintain accurate personal data will impose an onerous burden on computer users.

He also criticises the exemption of manual systems, the lack of a mechanism to assist those whose interests have been damaged by the misuse of computer-held personal data, and the voluntary nature of the proposed codes of practice as having "no teeth".

In contrast, a lone voice in favour is the Institute of Chartered Secretaries and Administrators. In a memorandum, the ICSA supports the proposals provided measures are implemented to protect the privacy of the individual in the keeping and transferring of personal data.

Meanwhile, the government has attempted to clarify the proposals' most contentious issue, that of exemption from statutory registration.

Speaking at the First National Conference on Computers in Personnel in London last week, Timothy Raison, Minister of State at the Home Office explained that police computerised databanks would not be wholly exempt.

Rair £2m target for French offshoot

by Jack Gee
UK MICROCOMPUTER company Rair has opened a French subsidiary with a target of 25 million francs (£2 million) turnover next year from sales of an 8-bit machine from the 8085 range. It sold 1,100 of these systems last year.

Rair attracted attention recently by choosing ICL to assemble and market its microcomputers.

It opened a West German subsidiary in 1977 and moved into the US last year to begin local production.

Industrial sources in Paris said that Rair had already taken orders for 50 systems in France and is

planning local assembly next year for its "black boxes". Production of 50 to 70 systems a month is the company's aim in order to justify decision for local manufacture in France.

Rair's "black box" production range from the 3/20 to the 3/50. They use the same 8-bit architecture with memory capacity ranging from 64K to 256K.

Rair is currently developing a 16-bit microcomputer, confident that it will be among the limited number of firms capable of controlling a substantial slice of the market four years hence, according to its Paris managers.

Irish firms 'unaware' of micros

by Tom MacSweeney
IRISH industry could be decimated within the next five to ten years because the vast majority of Irish firms are unaware of microelectronics or how to apply them.

So declared the managing director of the Microelectronics Applications Centre in Limerick, Brendan O'Malley, speaking in Dublin.

It was the latest in a series of warnings which Irish industry has received that it must get to grips with using new technology. These have become more strident as unions have appeared uncertain how to deal with developments which they fear could cause job losses, and which some unions have been using as basis for increased wages.

The Microelectronics Applications Centre was established in January, 1981, with the purpose of promoting and increasing the more effective use of microelectronics in all sectors of Irish industry.

It was established as a commercial enterprise under the sponsorship of the Shannon Free Airport Development Company, the National Institute for Higher Education in Limerick, the Industrial Development Authority and the National Board for Science and Technology.

O'Malley said the position was especially serious for Ireland in view of the vulnerable open economy and the low rate of investment in research and development, which was under 0.5% of gross output, compared to a European average of 3.5%.

Failure to adapt and grasp the opportunities offered by microelectronics would not preserve but destroy jobs at a rate never experienced before, he warned.

Germany is focus for UK micro software firm

by Claire Gooding
THE Microcomputer Business, a small but growing UK software company, has set its sights on the German market.

TMB has gone to the trouble of translating not only its manuals but the accounting technique used in its packages, to capture the Tandy market in Germany.

Auditors Binder Dijkster and Co helped TMB to adapt its accounting packages to German needs. The packages are already thoroughly documented and fit into the operating system with user-oriented commands.

The translation effort was a massive, but marketing director John Coyne anticipates selling 300 systems to Germany.

"We took a gamble on getting it right, and we've invested heavily," he said. Tandy has already entered discussions with the company of selling the system.

The Microcomputer Business is one of the "new wave" of microsoftware companies which are putting the emphasis on professional, well-packaged business software which can be sold internationally.

Elbit £1 million recovery

ELBIT Computers, the Israeli-owned microcomputer manufacturer, made a dramatic recovery in 1981. It turned a loss of \$1.9 million in 1980 into a profit of \$1.1 million, with sales increasing 17% to \$72.7 million.

Orders at the year end stood at \$120 million, compared with \$1 million a year earlier.

Four out of five installations adopt the 'It can't happen here' approach to fire, flood and sabotage — Amdahl survey



"Nothing that bad could happen here."

'Do nothing' approach to disaster at most sites

by Andrew Thomas
FOUR out of five installations are unprepared for disaster, says a damning report commissioned by Amdahl. The "It can't happen here" syndrome still prevails in the majority of sites, and the report lists the three most commonly quoted excuses for doing nothing as:

- 1 Nothing that bad could happen here.
- 2 Management won't take it seriously enough.
- 3 It costs too much, and we have other priorities.

The companies doing least to plan against disaster are those which have never taken the time to calculate the effects of a long-term loss of computing capability, says the report. Firms which have carried out such an investigation have usually been shocked into action once its results are known.

The report identifies seven major categories of threat to computer installations, and notes that most accidents can be caused by natural causes and by accidental or intentional human action: fire,

the ingress of noxious fumes, explosion and impact, flood, loss of services, loss of key staff and, last but not least, terrorist attack or sabotage.

Fires are the most commonly considered cause of disaster, but it is often forgotten that even a small fire can cause irreparable damage to computer equipment. The toxic and corrosive by-products of fires fuelled by synthetic insulating materials can put an installation out of action as effectively as a full scale inferno causing the collapse of the building.

One installation at a bank in London was put out of action by a small insulation fire in one of the air conditioning units. The equipment was covered in fine deposits of corrosive ash, which were circulated throughout the insides of the hardware by the cooling fans. The manufacturer examined the hardware and deemed it a total write-off.

The report also states that computers as such do not pose much of a fire risk. The main risk lies outside the machine room where

inflammable paper and cigarettes are often in close conjunction. There is little point in paying out for a comprehensive fire detection and extinguishing system for the machine room if the rest of the building is unprotected.

The main shortcomings identified by the researchers lay in the areas of access and environmental control. Some of the installations checked were located in busy pedestrian areas such as shopping precincts, or next to main roads. A poor standard of identity and right-of-entry checking was also discovered.

The survey offers guidelines for companies starting out on the road to the provision of comprehensive standby and contingency planning, and covers hardware, software, communications, data, procedures and logistics.

Even the largest company can go out of business following a disaster — and over 85% do.
* Computer Disasters and Contingency Planning. Price of charge from Amdahl (UK), Viking House, 29-31 Lampton Road, Hove, Sussex BN1 1JN. Phone 011-372-7383.

18 Japanese on IBM 'spying' charge

by Howard Kerten and Kevin Pearson
INDUSTRIAL spies who were arrested last week in the US were concerned more with details about the future of IBM operating systems than with hardware technology, according to informed US sources.

The US Department of Justice has charged 18 Japanese businessmen and one American with conspiracy to steal trade secrets belonging to IBM. The Japanese, employed by Hitachi and Mitsubishi, allegedly sought to buy details relating to IBM's 3380 disc bead drive assembly, the architecture of the company's 3380 processor, details of several software systems including MVS/SP, as well as information about the 370 and 4300 series.

Hitachi officials last week admitted paying \$340,000 for some material apparently originating with IBM, but claimed they believed the information had been obtained legally.

They were seeking the source and test coding for the 3081 large scale processor which, according to one member of the UK plug-compatible community, would tell them what functions it any, IBM has in its MVS/Extended Architecture (MVS/XA) which is not yet revealed. Opinion varies as to whether IBM has totally revealed its hand in its 308X product announcements so far. And the move on its plants in the US reflect the concern which is always present in the plug-compatible industry as to IBM's future intentions.

Six Japanese executives were arrested in California, and warrants have been issued for the arrest of the remaining 12, who are still in Japan.

Whether these 12 are extraditable is unclear. The extradition treaty between the US and Japan only states that Japan can extradite its own citizens if it cares to exercise the option. It is not obliged to do so.

Hitachi has played a strong part in the development of the National AS systems, although it is not known whether this has any bearing on the case.

NatSemi president Charles Sporek is a strong critic of Japanese business practices and the Japanese government, in terms of the research efforts by Japanese firms and government in high technology areas.

Officials of Mitsubishi have admitted paying \$20,000 for what it terms "sample information". Mitsubishi last year had sales of about \$354 million.

The Japanese are vigorous competitors of the Americans in high technology areas, and are often among the first to buy new computer products and then attempt to duplicate them by reverse engineering. However, business observers in the US were unable to cite any similar examples of blatantly illegal Japanese business behaviour.

Whether the Japanese companies actually received any IBM trade secrets remains unknown. IBM is especially security conscious, and one US security expert, former FBI man Harry Wood with a Virginia security consulting firm, said IBM's security was "first rate". FBI officials had high praise for IBM, which co-operated with the FBI throughout its investigation.

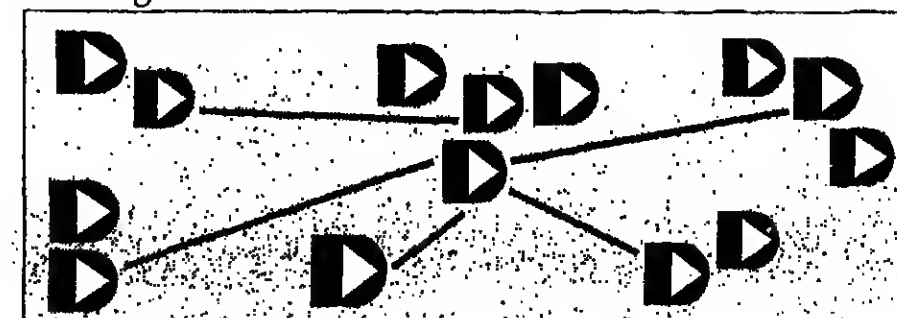
The case is believed to have begun last October, when IBM reportedly informed the FBI that confidential data had disappeared. Apparently, the FBI shortly thereafter set up a sting, or undercover, type operation aimed at catching the parties involved in illegally buying or selling information. In recent years the FBI has become far more interested in pursuing these investigations involving theft of high-tech (but not necessarily national defence) information.

The case had many of the aspects of a James Bond thriller, with early morning meetings, dummy corporations, and large amounts of cash exchanged in a surreptitious manner.

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Database venture offers access to vast range of EEC material

by Jack Gee

A NEW database venture is being launched which will offer clients throughout western Europe access to a vast range of material from the European Community and its member states.

Holland's Elsevier publishing group and the Limburg Development Bank are backing the new company, called Europe Data.

Karel Giel, former editor-in-chief of the Dutch national daily *Algemeen Dagblad*, has been named managing director of Europe Data. He said in Brussels that the company, which is based in Maastricht, will develop a wide range of databases in co-operation with EEC and national and local authorities.

Europe Data is currently organising the supply to Europe of the

vast mass of data from the United States Congressional Information Service (CIS).

The CIS processes 850,000 pages a year of information about the US House of Representatives and Senate, and generates a computer database holding ten million pages on microfilm.

The system is being mounted at the Euro host centre in Brussels on two CII-Honeywell Bull DPS 7 Computers using Mistral software. A special feature of the software designed for European use is a multi-lingual system which permits retrieval of stored information regardless of the language in which enquiry is made.

Giel said: "We now see the opportunity to develop a similar service in Europe based on Common Market Commission and Community publications. But in the

European system we plan to replace microfiches by optical discs as the storage medium in configuration with magnetic tape."

Europe Data's managing director added: "Although optical discs are still in their infancy, they are the wave of the future. The new Philips Megadisc system offers the possibility to store the equivalent of 500,000 A4 pages on one disc. We still do not know when this system will come on the market."

Emphasising that Elsevier's powerful position in the international publishing industry had enabled it to move into the database business, Giel said: "Gone are the small capital outlays with which one could develop new information products. Today's investments for building a new database are reckoned in millions of dollars."

'Standards let us dial 500 million phones'

by Donald Kennett

INVESTMENT in a new wideband telecommunications network could provide an instrument on which British genius "could play a vast variety of new tunes", British Telecom chairman Sir George Jefferson said last week.

Delivering the first of the British Computer Society annual lectures sponsored by Sperry Univac, Jefferson said all would be possible provided the network was designed from the outset to do it.

This meant establishing good standards, and for that reason BT had advised the government not to precipitate an excursion into cable television networks in a way that would inhibit future developments.

Some people thought that standards put a brake on progress, he said, "but I think of standards as great liberators. Without standards you would be unable, as you can, to dial 500 million tele-

phones in the world from your own home."

A new local network could easily have to last 25 years or more to justify its investment, and the next 25 years would bring much more sophisticated systems, he said.

For some time, Jefferson added, there had been a debate over whether it was better for intelligence to be located in telecommunications networks or in the systems attached to them. But it was a sterile argument, he said, because while some functions could only be effected in the network, others were better off the network, and some could be done either on or off.

Telecommunications people saw computers as things that plug into their network, while computer people saw the network as a clumsy means of linking devices, he said. But there was very little difference between a computer and a telephone exchange, and there



JEFFERSON... Standards are needed.

had been a great deal of mutual chafing.

Cause relationships between divergent interests had characterised the history of telecommunications. For example, while some predicted a bloodbath between IBM and AT&T, Jefferson thought it unlikely the two companies shared that view since each was the other's largest customer.

Thanking Sir George for his lecture, BCS president Peter Hall said there was still too much of a dichotomy between the telecommunications engineer and the computer scientist. "We must find some way of breaking the deadlock," he said.



Cash management for Midland's international customers.

Midland to introduce a computerised cash management service

by Nicholas Enticnap

COMPUTERISED cash management is coming to the UK. The Midland Bank has announced that it will be introducing a service for its business customers on September 1, using the Cash Express system developed by ADP Network Services.

Cash management is the term given to a service which correlates details of a company's bank accounts with different banks in several countries and several currencies, and analyses and reports on them as required.

A customer wishing to use the new Midland service would instruct each of his banks to report appropriate details to ADP's international network system. This is done in confidence and in such a way that nobody except the client can access the details, not even the Midland itself, according to Ron Beard, manager of the Midland's cash management service.

The customer would first have to arrange with the Midland to be able to use the service, and would subsequently be billed by the bank according to his usage. The Midland in turn is billed by ADP Network, which is looking to sell the service to other European banks as well.

The idea of cash management originated in the US and was, according to Beard, "designed to overcome the peculiarities of the American banking system. There are 14,000 banking organisations in the US - there were 20,000 10 years ago - so there is no integrated money transfer system as in the UK."

"Any company trading through a number of points can take a considerable time to see its money in its local bank account - up to as much as 10 days. Cash management systems were designed to overcome the difficulties this produced."

SALES BRIEF TSB orders £6m UK-built autotellers

BRITISH made autoteller machines from Burgess have been ordered by the TSB Savings Bank for installation in a network of 1,650 branches in the UK. The order, worth £6m, is for 400 machines.

The machines will form part of TSB's Speedbank network which enables customers to withdraw cash, make balance enquiries, order cheques and so on.

Hitting the jackpot

WEST Germany's main bank group has bought more than £1 million worth of security equipment for processing equipment. De La Rue Systems, the company's largest unit for De La Rue Systems, covers 16,900 sq ft and is a document reading machine.

£150,000 system GARDEN waterlog equipment manufacturer Hozelock has installed a £150,000 system for materials management and processing. Data Logic's Professional Services Division has implemented the system, which is based on a Hewlett-Packard mini-computer.

Research micro

PHILIPS Research Lab has installed an Onyx 16-bit micro with one Mbyte of memory for electronics research work at Hill, Surrey. The system, Scan Computers, uses the operating system and has a Mbyte Winchester disc with a bridge tape back-up.

Motor links

THE Motor Agents' Pension Fund has ordered £200,000 worth of Burgess equipment, including the new 212 micro, newly released B21 micro, and regional offices and linked to B1955 central processor based MAPAC headquarters in Leamington.

Military kit

FERRANTI's CAM-X computer-aided engineering system has been chosen by the Royal Ordnance Research and Development Establishment for production of military equipment. The CAM-X system was put through a one-year evaluation period. Based on Ferranti's VAX 11/78, the RARDE's CAM-X system eventually have three Mbytes of main memory and over 130 Mbytes of disc storage.

ICL in orbit

HOME entertainment retailer bit Electronics is to install a point of sale terminal in each of the 36 branches it plans to open. Orbit has placed an initial order valued at £150,000 for 36 Orbit 9507 terminals and 36 9526 terminal controllers.

ICL woos the software industry in Copenhagen

by Kevan Pearson

ICL was out in force at the World Computer Services Industry Congress in Copenhagen last week, following its meeting with the Computing Services Association earlier in June.

ICL sent a large delegation to Copenhagen including Tim Holley, ICL's director of computer services and Basil Cousins, ICL's senior manager for software products. According to Holley, ICL held conference talks with over 100 software houses in the first two days of the conference.

ICL is following up internationally what Robb Wilton said at the CSA quarterly lunch, "said Holley. "We want as much software up and running on ICL equipment as possible, and we are using this opportunity to extend the arrangements to the international market."

Close relations with the software industry are a central part of ICL's Tradepoint operation, and the company recently held talks with the CSA about its future relations with the UK software industry.

And while the meeting seems to have been regarded as a success, there are still several problems to be resolved before Tradepoint can operate totally successfully. The problems centre on the software companies' relations with other computer manufacturers, and the cost of converting existing products to run on ICL equipment.

However, there is little doubt that ICL is offering incentives to the industry. For example, according to Holley ICL will not be developing software for the Atlas range of IBM-compatible mainframes. It hopes to tap the existing market in independent software for IBM operating systems.

Further, Holley says that ICL will concentrate its software development in about six different business areas, and will encourage independent companies to supply software for others. The onus is firmly on the software companies to get in touch with ICL.

"We are looking to companies to call us to find out what we are doing," says Holley.

ICL has just published its first directory of software packages available to run on ICL computers. It is available in English only, at the moment, and contains 700 items. A French language version is being written for Sicob to be held in Paris in September.

However, ICL gives no guarantee that the systems are suitable for its computers. The companies submitting the systems are asked to sign a declaration of suitability, drawn up by ICL and the CSA.

GA bid for share of 16-bit mini market

by Maggie McLening

GENERAL Automation is out to grab a share of the 16-bit microcomputer market from Universal Computers and CMC, by harnessing the Pick operating system to its newly announced Interactor 600 range.

The Pick system is similar to Unix in that it is a multi-user environment for micros, minis or mainframes, but is more user oriented, and has to be implemented in the firmware of a machine. It is widely used to provide high performance relational database facilities for interactive business systems.

"By 1983, all minis will have the capability to handle online TP systems, and 90% of users will be using DBMS by 1990," said Bill Rice, managing director of GA. "We are now offering systems that are 30%-40% faster than others on the market, with no limit to configuration because they are all expandable."

Three models in the Interactor range, manufactured by Evolution Technology, are currently available:



RICE... "Ninety per cent of users will be using DBMS by 1990."

able: the 640, 660 and 680, with 64K up to 1,024K of memory, each of which can support up to 64 terminals. GA has exclusive marketing rights to the equipment in Europe.

By adopting Pick, GA is providing access to ready-made application software, such as the Manu-

AT&T set to fight US national Telecommunications Bill

by Howard Karten

THE US is to make the first shake-up of its telecommunications policy since 1934, with AT&T, the world's biggest company, battling the government all the way.

The first major reform of the 1934 Federal Communications Act moved one step closer to reality late last month, when a Bill was sent to a House of Representatives committee for consideration. The Bill, sponsored by representative Tim Wirth (Democrat of Colorado) would establish a national telecommunications policy for the

country and possibly alter the terms of the January settlement of the Department of Justice's antitrust suit against AT&T.

AT&T is vigorously opposing the Bill, and has budgeted a war chest of some \$2 million for a widespread public relations and lobbying effort. AT&T officials have lost no opportunity to speak against the Bill in public, fearing that, if passed, it would shake the company.

In a speech last Thursday before the National Press Club in Washington, Wirth reiterated his

contention that the AT&T efforts to kill the Bill were "emotional and rhetorical."

The Bill has created some unusual coalitions among US firms. CBEMA, the Computer and Business Equipment Manufacturers Association, whose members include large firms such as IBM and DEC, has taken a stance against the Bill. MCI Communications, a Bell competitor in the long-distance market (and one-time bitter enemy of AT&T in an historic suit recently), has joined Bell in opposing the Bill.

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Gordon & Gotch buys software house

by Claire Gooding

BURROUGHS bureau Gordon and Gotch is entering the office systems market with the purchase of a software house, Senate Computer Services.

G&G has bought the assets and capital of the software house, also a Burroughs specialist, as a way into a new market. Senate's expertise is mostly in writing software for the B1000, the low-end of Burroughs' mainframe range.

"It is part of our strategy to become more active in supplying software," explained G&G managing director Patrick Watts. "We grow by moving into new fields,

and I see office software as a large area not fully exploited."

"Senate has a lot of technical expertise in the DMS area. A company the size of ours can put a bit more oomph into the whole operation." DMS is Burroughs' data management system.

Senate approached G&G first, looking for backing and greater resources so that it could market its software more effectively. Senate's packages include the Wordcom system, which links Burroughs and other mainframes to word processing terminals.

Senate already has a wide network of dealers.

Q1 launches office system

by Nicholas Enticnap

MICRO manufacturer Q1 Europe has diversified into the electronic office market with the launch of its Office Information System. The company is looking for office equipment suppliers to act as distributors.

The new system is built around the company's Q1 Net local area network, and uses a brand new workstation, the D69, and new word processing software.

The D69 is like the company's micros built around the Z80 processor, and has a 64K byte RAM and either one or two 8in floppy discs storing a maximum 3.2 Mbytes.



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Some good questions — but not many answers

Unauthorised copying of software is theft

THE World Computer Services Industry Congress ended its third meeting in Copenhagen last week with many delegates feeling that although some interesting questions had been raised, few answers had been provided.

The Congress was divided into plenary keynote presentations, and more informal workshop sessions, and the consensus was that the workshops were more useful than the main presentations.

The problem, according to one UK delegate, was that many of the sessions dealt in broad generalisations about the industry, and did not get to grips with the problems and issues the industry faces.

The main theme was supposed to be the impact of new technology on the computer services industry, both suppliers and users. And there were some useful sessions on how new technology will impact the user, particularly those given on the first day by Clive Jenkins, ASTMS general secretary, and Svend Auker, Danish Minister for Labour, on how new technology will affect the industry.

The Congress particularly failed to address some of the more contentious problems which the rapidly developing hardware and communications technologies bring for the computer services industry.

However, most delegates felt that the Congress was worthwhile, and that future events would be better if there were more workshops, like those this year on the software products industry, and the general industry structure, and fewer plenary sessions.

This should be welcomed by the Japanese who are hosting the next congress in Tokyo in 1984. Japanese delegates made up about 10% of the 620 delegates.

THE software industry must accept the lion's share of the burden of providing adequate software protection, Barney Gibbens, chairman of the CAP Group, told a specialist session at the World Computer Services Industry Congress. He said we needed to get the idea across that "unauthorised copying of software is theft."

He added that he did not think the British were "overly worried" about software protection, since only three CSA members of the 190 total membership responded to the government's Green Paper on software protection earlier this year.

Gibbens felt that the best form of legal protection was contractual licensing which could be more effective than copyright control since licensing protected the idea

behind a program, whereas copyright only protected the expression of the idea.

Licensing also imposed confidentiality on the licensee, as high as the owner would like to go. So licensing would not invalidate a claim that the program was a trade secret. Since to copyright an item disclosure of the details was required, copyright could invalidate a claim that an item was a trade secret.

Gibbens said there were three major drawbacks to licensing, however. Firstly it was very difficult to monitor compliance in a mass market, Gibbens quoted Visicalc as an example which was widely pirated, but which still made a lot of money. He said the best form of protection in these cases was the relatively short life-

cycle of the products.

The second criticism was that licensing was useless against third parties since the agreement only covered actions by the licensee.

Finally, he said it was of limited effect against a concerted and organised attempt to pirate a program.

On the British front he said there was some hope that the Foreign and Counterfeiting Act 1981 would also apply to software. The Act was specifically designed to cover books and other printed matter.

But it seemed likely that the definition used in the Act could also apply to computer programs.

He concluded that the industry must be responsible for policing the issue, and for setting an example.



GIBBENS... "Best form of legal protection is contractual licensing."

'Future if the industry is in custom projects' — Dreyfus

ONE of the most contentious debates at the World Computer Services Industry Congress was whether the future of the industry lies in custom software or packages. And there were some divergent views from the big suppliers on both sides.

One of the most forceful speakers was CAP Gemini-Sogeti vice-chairman Philippe Dreyfus. He said his view, and that of his company was that the future direction of the industry lay in custom projects and individual developments. He said the package suppliers would be absorbed by the particular market which they supplied and that they would not be part of the computer services industry.

He told the conference: "90% of you want to go that way — out of the computer services industry. CGS does not: CGS wants to be part of the services industry."

The opposite argument was advanced by Doug Eyskens, director-general of the CSA. He believed that the market was moving heavily into packages, and that the days of the monolithic, complex project were over.

Roger Graham, chairman of the CSA, and managing director of BIS, also disagreed with Dreyfus' scenario. Under the Dreyfus scheme, he said, companies like BIS would be absorbed by the banking sector, leaving the computer industry to companies like CGS.

COMPEC NORTH by Boris Sedacca

Show provides platform for the latest launches

THE Compec exhibition in London is the major annual computer industry event for which most companies save their announcements. But others are not prepared to wait that long, and Compec North provided the platform for many company launches.

Japanese consumer electronics giant Sharp Electronics which has made its home in Manchester, said that it would be launching a serial RS232C interface for its new PC1500 pocket computer in November, allowing the device to connect to standard printers or to a remote computer over a commun-

ications link. This, with a special touch-sensitive keyboard containing 10 rows of 14 software definable keys each, will allow applications such as order entry to be carried out by travelling salesmen for example, who can place a template over the keypad and connect the system up to a telephone using an acoustic coupler.

Paul Streeter, general manager of Sharp's systems division, added that a new colour machine would be launched next year to compete with the Commodore Vic and the Sinclair. "We are also hoping to

get sample quantities this year of new seven-colour ink jet printers currently sold in Japan," he said.

Clear Communications announced that it was in full production with the 16K mini-terminal introduced at Compec in November, a small manager workstation designed to occupy a minimum amount of desk surface.

Terminal manufacturer Data Systems is looking at ways of making the CPM-based Wordstar word processing package less cumbersome to use, according to marketing services executive G. Hammore.

Nokia UK signs first of 17 distributors

WITH the Finnish economy entering the first stages of a slump, Nokia, Finland's largest private enterprise industrial group is looking to its overseas operations to provide growth.

Nokia UK last week signed up its first two distributors at Compec North representing business worth £1.5 million over the next three years.

The two Northern distributors are CEMA Business Services based in Manchester, and Rotary Electronic Services in Sheffield. Nokia (UK) managing director Peter Cox hopes to sign up another 15 by the end of the year.

By international standards, the group's Nokia Data division ranks as a medium-sized computer manufacturer. The company's product range includes a CPM microcomputer which at £2,385 is not very competitive against other standalone CPM machines, but which can be configured around a Nokia point-of-sale system.

"We have sold such a system to Games Workshop retail outlets. They have connected our PoS terminal to the micro, which is in

turn connected to a Nokia minicomputer over a communications link," Cox said.

Both distributors will supply the full Nokia range, providing a rolling three-month forecast of their stock requirements. The distributorship agreement with CEMA Business Services initially covers a period of one year and is valued at £200,000.

The value of the agreement with Rotary is about £1.2 million.



COX... "Fifteen more distributors by end of year."

Cartridge drive for Profile

A CARTRIDGE drive costing £1,475 for Apple's new Profile five Mbyte storage capacity disc drive was launched by DN Computer Services at Compec North.

Called Shadow III, the device is based on the 3M Data Cartridge Drive. It stores 3.5 Mbytes of data on ordinary-length cartridges, although extended length cartridges will also be available according to

Brian Payne, director of DN Computer Services, providing back-up for the full five Mbytes of the Profile disc drive.

"Currently it takes about 20 minutes to dump five Mbytes on to two tapes," Payne said. "But it is not just a streamer drive limited to dumping from and loading to hard disc. It can also be connected directly to the processor using the stop/start mechanism."

Hytec heads for £2 million turnover this year

FOLLOWING a financial restructuring package from the Nokia Enterprise Board and other venture capital organisations, Hytec is showing the signs of being a good success story.

The company now has a monthly turnover of about £250,000 and is shipping about £250,000 a month, with a projected turnover of over £2 million for its financial year ending in August.

The company is set to start manufacturing the range of synchronous terminals with local computing facilities under the CPM operating system which it presently buys in from ECS in California.

Hytec managing director Chris Howe-Davies said at Compec North: "We have already begun building in our own land disc manufactured by Rodime in Sweden, into the system."

"We expect to start building our own systems at our new Clonsilla factory in August and we should be in full production about 200 units a month, by February, so that by next August we will have manufactured around 1,000 units," he added.

The extra production will be needed for the company's imminent push into the European market.

A new software feature called Concurrent Resource Feature was launched by the company at Compec North, allowing two programs to run concurrently within one terminal so that a print run may be performed at the same time as a manual operation to a mainframe.

Nicholas Enticknap analyses the effects of the support offered by a group of companies for LAN standards

Agreement opens gate to rapid growth of small networked systems

LAST week's announcement by a substantial group of companies that they would jointly support two European Computer Manufacturers Association (ECMA) standards for local area networks was an event of major importance. It is the first time a significant sector of the industry has made such a commitment, and it opens the way for rapid growth of small networked systems.

Before considering the implications in detail, here are the major points of the announcement. First, it was made jointly by a group of companies which includes CIL-Honeywell Bull, DEC, Fujitsu, Hewlett-Packard, ICL, Intel, the ILL group, Nixdorf, Siemens and Xerox.

These major computer companies were joined by others which make or sell associated products, namely LM Ericsson, Logica VTS, Mostek, Olitec Olivetti Telecomunicazioni, 3COM,

As already stated, there are no ISO standards relating to this model. There is, however, a draft standard for the fourth (transport) layer, and this is based on an ECMA standard ratified in 1980. This is one of the two standards referred to in the joint announcement.

The other relates to the bottom two layers, and is effectively a ratification of the principles used in Xerox's Ethernet LAN. It specifies the use of a data link technique called carrier sense multiple access with collision detection (CSMA/CD), on a physical system built from baseband coaxial cable.

The decision of American companies such as DEC, Intel and Xerox to support an Ethernet-based standard is not surprising, but the fact that they are supporting ECMA in preference to IEEE is, in doing so, they are putting pressure on IEEE to adapt to the ECMA position.

It is because this difference exists between the ECMA and IEEE standards that some other major companies have not put their name to the announcement. Honeywell, for example, is represented by CIL-Honeywell Bull on ECMA committees, and the two companies work together on telecomms standards.

But Honeywell is not included in the list because it is not prepared to commit itself between ECMA and IEEE (on which it is directly represented) at this stage. Sperry Univac and IBM are similarly awaiting further developments.

These political implications do not affect the overall picture greatly. ICL's managing director, Robb Wilman, described the agreement as "unprecedented", and argued that it "will be recognised in time as being a significant step towards the development of information technology as a standard and a framework for the growth of the economy, by providing the essential infrastructure for effective communication."

It is indeed unprecedented, and it is worth spending a little time considering why this should be so. Traditionally, the computer industry has adopted a disparaging approach towards international standards, companies preferring instead to adopt their own individual approaches in the hope that this would lock their customers into the particular supplier in question.

Lip service has been paid to time been paid to the ideal of standards. But in practice all the mainframe manufacturers have found their own reasons for "improving" standards that have been agreed, such as the Codasyl database standard, or for regarding them as altogether deficient and ignoring them completely.

Wilman recognised this in his reference to the "de facto standards and the ho-hum performance that can come with a single supplier", and an oblique sideways swipe at IBM.

IBM may have been the worst offender, but that is because it could most afford to be, and ICL's past record certainly gives it nothing to be proud of.

So why has the computer industry suddenly changed its tune? This kind of commitment would have been just as good for users in the Sixties and Seventies as it is today, but at that time ICL and others saw nothing in it for them. What do they see now?

There are three major factors to note. In the first place, the two standards relate to communications rather than to computing. The communications world has always

been more aware of the need for standards. Witness the fact that you can pick up a telephone and use it to contact anyone else who has one, wherever in the world he may be.

The second factor relates to the computer industry, which reached a watershed in the late Seventies. During the Seventies all the major companies saw turnover and profit growing steadily at 20% to 25% per year.

The growth was provided as much by the increasing DP requirements of existing computer users as by new business, and on average four out of five customers went back to the same supplier for their replacement machines. There was thus no incentive to commit to international standards, rather the reverse.

At the end of the Seventies this

satisfactory situation suddenly changed. The DP market had become saturated, and consequently the major mainframe companies saw a dramatic slowdown in growth and an equally dramatic erosion of profit. That is the state of the industry today.

For these companies, new growth will have to come from somewhere other than the tradi-

tional DP market. This is the reason for the consensus view that information technology is the path of progress.

From the computer industry's point of view, this means the application of the technology they know to new market areas which promise growth and profit figures of the kind they are used to.

Unfortunately for them, this growth is happening much more slowly than they would like. The establishment of standards is seen as a means of stimulating this growth.

A third reason for this new enthusiasm for standards is that the new micro-based products market has been generating its own de facto standards. There are hordes of eight-bit systems on the market, but they all use the same two or three processor chips and bus structures.

In software, Basic rapidly established itself as a standard language, while CPM has become accepted as the standard eight-bit operating system. It is reasonable to predict that the same thing will happen with local area networks. It thus makes sense for the industry to take steps to organise agreement on the system to prevail, rather than waiting for the market to decide of its own volition.

For these companies, new growth will have to come from somewhere other than the tradi-

WILMOT... "De facto standards and ho-hum performance."



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Apple 1.5A

Copyright 'safeguard' for UK users to be set up by CSA

THE Computing Services Association is to form a committee to advise members on software copyright and to help safeguard users in the UK.

Recent disputes involving claims to the original ownership of products that have been purchased and distributed in good faith by suppliers have raised several questions on the wording of contracts and definition of products.

Newly-formed software house MetaComCo is to pay royalties to the designer of a Basic interpreter on top of the price it paid to the (now liquidated) supplier of the product, because it had no idea that the supplier was not the originator.

The pending case between ABC Management Systems and McCormack & Dodge Corp in the US might have had repercussions for British users of the GL/Plus ledger system, had UK agent RTZ Computer Service not taken out the appropriate insurance to safeguard them.

AMS alleges that M&D has broken a licensing agreement by selling its ABC system in Europe under another name, but M&D counter claims that it has rewritten the product so completely that the original arrangement no longer holds. Regardless of the outcome of the case, RTZ users will retain their software and support.

According to Michael Deane, a software protection consultant, insurance is the best way to protect users' interests: "Good faith purchasers normally have the right of reimbursement from the supplier if the product is withdrawn," he explained. "If that supplier is bankrupted by having a patent infringement action slapped on it, the user has no-one to sue and is in trouble."

It is also possible to have an indemnity clause going back to the originator of a problem spelled out in the licensing agreement, so that if the supplier disappears, the user has recourse to an alternative source. Since most software is

supplied in object code format, should the supplier or originator go bankrupt, the user is unable to implement any corrections, updates or modifications to the program.

To cover this, an escrow agent can be appointed, who is an independent party holding the source code until circumstances specified in the contract, such as failure or liquidation, occur. In the event of this happening, the escrow agent then supplies the source code to the user. This type of condition is common in contracts drawn up in the US, but comparatively rare in the UK so far.

Another aspect of copyright law uncovered by the ABC Management Systems-McCormack & Dodge case is how far copyright laws apply to amended software. McCormack & Dodge has admitted that one of its products was derived from the ABC System, but claims that it has been altered so fundamentally that the original agreement no longer applies.

"There are no guidelines laid down in this area, because there is no copyright attached to an idea until it is given expression. If someone translates a book from English to French, the copyright remains with the author. If only the theme is taken, it is a matter of the degree of deviation from the original," said Deane.

This may affect imported software, particularly financial packages from the US that are heavily rewritten to suit European users. Systems house PME, UK distributor of The Office Manager (TOM) software for Wang minicomputers, has already evolved a joint copyright arrangement to cover itself.

"Our contract with TOM specifies that they are happy for us to change their software," said Michael Powell, managing director of PME. "However, we have added a joint copyright notice that goes on the bottom of each screen in the copies that go out to the user."



POWELL... "We have added a joint copyright notice on each screen."

by Maggie McLening

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The Communications I.T. Circle has been established as a forum for the interchange of experiences and as a source of information. Topics to be addressed in 1982/83 are: * A Review of British Telecom Services * Local Area Networks * Cost-effective Data Transmission * Attachments to PSS * Corporate Communication Networks * The Liberalisation of British Telecom.

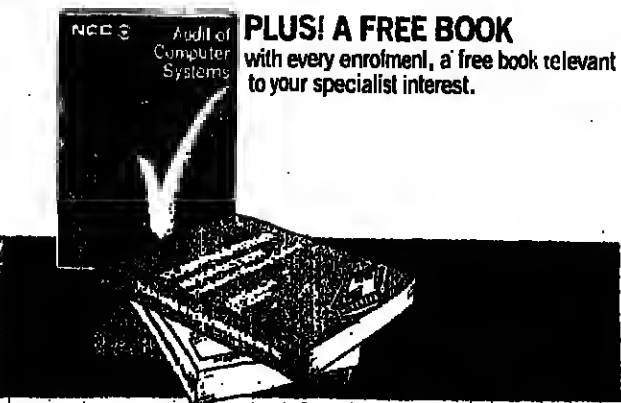
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Full range of back-up for Commodore UK launch

COMMODORE is to back the UK launch of its business machines announced at Hannover Fair with a full range of software.

This will give its 720 machine, due out in September, added ammunition for its fight to capture a share of the 16-bit market from the IBM Personal Computer, the Sirius I and Apple III.

The 720 has a split bus architecture that allows a second processor to run concurrently, and can run under CP/M, giving access to a wealth of existing programs.

Launched into the middle of the range, the 500 is primarily a scientific machine because of its colour graphics potential, although it has the same CPU and keyboard as the 720. CAD facilities will be provided for the 500, process numeric control and word processing, also a Prestel adaptor.

The 64 model, which Commodore denies is merely an enhanced VIC 20, is also to have word processing and database management, with stock control, diary planner and financial modelling packages.

In November Silicon Office software from the Bristol Software factory is due to be released for the 720, according to Gail Wellington, Commodore's software products manager at Slough. The full range of 2000, 4000 and 8000 machines, with the new releases, can all be linked in the meantime by Commodore's Keynet networking system, released last week.

MPSL aims for multi-user market with 68000 software

by Claire Gooding
MICROSOFTWARE and systems house MPSL is gunning for the larger end of the micro market with a Motorola 68000 version of its software.

The 68000 has caught the fancy of the market as the most promising of the 16-bit systems, partly because of the power it offers. By putting its BOS operating system and extensive MicroCobol applications software on to the 68000, MPSL hopes to crack open the multi-user market.

"We have already proved that we can run the software effectively on the Intel 8086 very well with about 10 screens," said John

SOFTWARE BRIEF

University to market programs

BRADFORD University has followed up the success of its independent Software Services Group with the launch of Technology Transfer Service market programs developed by the Postgraduate School of Science and Industrial Technology.

Two programs have been licensed for the Hewlett-Packard HP45B desk-top computer, a 32, an interactive plant reliability analysis package, and a program for critical path analysis capital investment projects.

Database system

MICROCOMPUTER database system dBase II developed by Ashton-Tate is now available in the UK from distributor Lifeboat Associates. Priced at £1,000, the package includes a complete with Zip screen and report generator, dBase II runs on any CP/M based micro and offers data management facilities.

WP package

A MINICOMPUTER-based word processing package to cope with scientific and mathematical text has been produced by Topexpress in Cambridge. Developed largely for Topexpress own use, the package runs on either the NM410 or NM430 minicomputer system from Computer Automation.

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HARRISON... Record profits

Racal and Ferranti results take off

THE British electronics industry was given a major boost last week when two of its leading companies produced better than expected results for the year.

Racal chairman Sir Ernest Harrison announced that pre-tax profits to Racal's year-end at March 31 were up by more than 40% at a record £102 million. Sales rose to £646 million, 20% up on a year ago.

Ferranti's pre-tax profit of £23.8 million on sales of £307 million represents a rise of over 31%. Ferranti is also making a one for one scrip issue to its shareholders as a prelude to the unfreezing of its shares next month.

Dealings in Ferranti's shares were frozen for two years following the National Enterprise Board sell-

off in July 1980. But with record profits and a scrip issue, trading could be very snappy when the shares become available to the market.

Racal was one of the companies which bid for Ferranti at the time of the National Enterprise Board sell-off. But its subsequent purchase of Decca ruled out any further acquisitions at the time.

Now, after record profits, and with a large bank balance, the company is once again on the acquisition trail. But a company spokesman declined to comment on whether it was interested in purchasing Ferranti.

The other company linked with a Ferranti takeover is Sir Arnold Weinstock's GEC.

Commenting on its own activi-

ties Racal said that turnover from data communications had grown by 30% a year, and now totalled £178 million - over 27% of the company's total business. Leighton Davies, a director, said there was no indication of this aspect of the business slowing down. Orders in the first 10 weeks of 1982 are running at an annual rate of £250 million.

An analysis of Ferranti's results shows an improved performance from its computer division, with profit up to £8.6 million from £7.3 million the previous year.

● Ferranti has just announced that it is trying to acquire Ocean Research Equipment in the US. It is reported to have offered £3.43 million for the company.

\$10m loss for NatSemi

NATIONAL Semiconductor, the troubled US chip manufacturer, reported a loss of \$10.7 million on stagnant sales of \$1.1 billion. Profits for the previous year stood at \$52.4 million.

The company said it expected a slow but steady recovery in 1983.

The company's semiconductor activities bore the brunt of the slump. Nat Semi was taken off, and subsequently restored to the list of authorised suppliers for military equipment in the US, but the company said that did not affect the poor result.

AEG Telefunken seeks part-nationalisation

TROUBLED West German electronics and telecommunications group AEG Telefunken is to seek a partial nationalisation by the West German government in preference to an overseas company taking a stake in the firm.

The workforce at AEG is to meet the West German Economics Minister to discuss the proposals.

The company's directors had previously backed a deal with Britain's GEC, in which GEC would take a 40% stake in a new

subsidiary, AEG Technik. However, the opposition of the workers has forced the board to consider the nationalisation plan, and to postpone a decision on the deal with GEC.

Trade unions at the company are concerned that a deal with GEC would result in further job losses.

AEG has also held talks with the French Thomson-Brandt about collaboration.

Datapoint loss on third quarter

US MINICOMPUTER and telecommunications manufacturer Datapoint made a loss of \$23 million in the third quarter of this year, its first quarterly loss in almost a decade.

Datapoint's trading loss was \$18.6 million in the third quarter, but this was increased to \$23 million because sales and profits for previous quarters were overstated due to sales techniques uncovered by an internal review of the company's domestic marketing practices.

The overstatement of sales in the current year is estimated at \$15 million, resulting in a \$4.4 million reduction in profits for the third quarter. Through three quarters the company shows a loss of \$899,000 on turnover of \$367.7 million.

Datapoint instigated its marketing review in the face of an increased rate of product returns in the first half of 1982. Subsequently it has been alleged by employees that the company shipped systems to customers who had not met its credit requirements, and participated in brokerage schemes to help overburdened distributors buy more machines than they could afford.

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Olivetti sales up - but fall in profits expected

ITALIAN computer and office equipment manufacturer Olivetti saw sales rise by over 27% to \$1.3 billion in the first five months of the present financial year, though profits for 1982 are not expected to reach the 1981 level, said Carlo de Benedetti, Olivetti's chief executive.

Orders were up 14.9% compared with the same period last year. de Benedetti attributed the poor profit performance to the depressed markets in Western Europe and the US. He described group profits as "extremely modest" compared with turnover.

Earlier this year the Italian parent company declared record profits of \$62.7 million on sales of almost \$1 billion. But group profits for the previous year, including overseas earnings, were just over \$68.3 million on sales of over \$2 billion.

Olivetti was turned around in the late Seventies when de Benedetti, with Italian government backing support, took over the company.

Despite his success in turning Olivetti, de Benedetti last week offered little hope for Europe's mainframe manufacturers. At a World Computer Services Ltd conference he stated that the company might still have a role in mainframe manufacture.

He put in a plea for co-operation between European countries in information technology and said that it was the only way that the industries in that field could survive.

CW SHARES TABLE

Lower prices

Profit for the first quarter of 1982 was \$538,000, 17% up on the \$462,000 of first quarter 1981. This is a 1.3% net margin on sales, and augurs poorly for Informatics shares when they become fully listed on the New York Exchange this month.

Informatics is one of the biggest software houses in the US.

...review in the late 1981 an increased rate of product returns in the first half of 1982. Subsequently it has been alleged by employees that the company shipped systems to customers who had not met its credit requirements, and participated in brokerage schemes to help overburdened distributors buy more machines than they could afford.

A town with a past for the company

Data Source		Index 1000	
Futures		London Stock Exchange	
1982		1982	
High	Low	High	Low
198	181	ACI (Apr 82)	182
172	166	ACI (May 82)	181
172	166	ACI (Jun 82)	180
172	166	ACI (Jul 82)	179
172	166	ACI (Aug 82)	178
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172	166	ACI (Aug 83)	166
172	166	ACI (Sep 83)	165
172	166	ACI (Oct 83)	164
172	166	ACI (Nov 83)	163
172	166	ACI (Dec 83)	162
172	166	ACI (Jan 84)	161
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172	166	ACI (Jun 84)	156
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172	166	ACI (Sep 84)	153
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172	166	ACI (May 97)	1
172	166	ACI (Jun 97)	0
172	166	ACI (Jul 97)	-1
172	166	ACI (Aug 97)	-2
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172	166	ACI (Nov 05)	-101
172	166	ACI (Dec 05)</	

Wanted — a software engineering handbook

THE Sixth Principle of Infotecture states: "We must emphasise the art of controlling all the many attributes of the set of techniques which we select for a particular design."

The principle adds that we must constantly collect practical experience data on the actual effects in various projects, and various environments. We must also develop methods and insights on how to estimate the cumulative effect of attributes which affect us when we combine two or more techniques in the same system or product.

And we have to develop the art of measurement of the various interesting attributes of technology.

Our profession is at present in poor shape in relation to the ambitious needs of the Sixth Principle. There is virtually no systematic collection of the many threatening and promising side-effects of the hundreds of technological alternatives which confront the computer systems designer or manager at the moment.

What we need is a software engineering handbook. There is a clear model for this in other professions

such as electrical engineering, building trades and pharmaceuticals. But there is no publicly available handbook with a reasonable assortment of attribute data.

The nearest thing available of the standard I envisage is Montgomery Phister's Data Processing Technology and Economics (Digital Press, Massachusetts).

The good news is that the IEEE Computer Society has accepted my challenge to sponsor such a software engineering handbook on a public basis. This is an engineering society, and it is the first group to recognise the necessity for a more organised body of knowledge as the basis for exercising our profession.

The first public IEEE committee projects meeting for the software engineering handbook will take place this month in California. I will keep readers informed as the project develops — but don't hold your breath. It will take time.

We have already decided that the primary media for the handbook will be a computer readable format, and two such prototypes already exist in Norway, one

with Martin Brooks of the Central Institute of Industrial Research in Oslo, who will lead the IEEE project, and one on my own automated Design by Objectives Software, of which I have written earlier in this column.

The only place that I would identify as doing in a serious manner the data collection on techniques that I am advocating, seems to be the IBM Federal Systems Division in Bethesda, Maryland. I visited Bethesda last November and met Walter Ellis who currently heads the effort. Every FSD project must submit quantitative data on project costs and techniques used (about 500 lines of parameters). This is entered into an APPL database and analysed in various ways to give the FSD insight into the cost and effectiveness of technologies and methods used.

The IBM Systems Journal Number One, 1977, published some of the only publicly available data from this source, and we should all hope to share more as time goes on. But others must think about accumulating their



Tom Gilb is an independent consultant, lecturer and author on computing topics.

own data. IBM data may not be relevant for your environment.

Barry Boehm, in his new Software Engineering Economics (Prentice Hall) indicated that his professional circle (aerospace industry) has also collected such data on over 50 techniques for use in calibrating cost estimation models. For the reader who wants an insight into the uses to which we might usefully apply such data, Boehm's book is highly recommended.

The entire idea of collecting measurable technology attribute data and making it available has exciting perspectives for all of us, not least in the education sector.

Tom Gilb

FOCUS

THE news that the NCC, long respected as the friend and guardian of the computer department, has changed sides and is actively supporting the sales marketplace, must have been seen as a final blow. Most DPMs would agree that the computer salespeople were already capable of marketing their wares and that NCC ambitions should be directed towards assisting the DP team to resist sales talk.

The basic element of the NCC sales course concentrates on such sinister sounding topics as prospect qualification, territory management and closing business.

There should be no shortage of volunteers from the DP industry to assist the NCC with its sales training workshops. DPMs can identify a sales prospect qualification at a considerable distance and most are only too pleased to close business — and the door — without undue delay.

It is hoped that the NCC course will expose some of the highly irri-

Sale time for NCC

tating aspects of DP marketing, such as the trendy adverts where the equipment is seen operating in some leafy glade or sunny beach. In such cases the DPM, seen formally dressed in a dark business suit, gazes at the colourful horizon, wondering perhaps whether an MBO path route will be found to get the gear back to base before his managing director finds out where it has been delivered.

With computer products steadily diminishing in size and cost, not only will the salesman be able to carry his wares and receipt book around, but advertising themes will have to change if the human scale is not to overwhelm the equipment. Already the enjoyable computer animal series, as designed by Honeywell, has given way to fish-eye lens views of daisy wheelers seen discussing the introduction of office of the future

technology with the chairman in the trendy surroundings of the company boardroom.

Users are portrayed either as jovial businessmen wrapped in yards of red tape or worried accountants, keenly seeking a suitable financial management package.

A useful feature of the NCC course for the DP purchaser would be a session on political considerations. State installations, for example, are heavily encouraged to choose indigenous suppliers, almost irrespective of merit or suitability. As a result, the competition loses little time in reminding all concerned of their UK manufacturing operation — valid factors if the UK is to continue to enjoy the benefits of technological development.

It is far from certain that State intervention policies result in producing a healthy and profitable

independent computer industry.

A recent UK government report on the French computer industry cast doubt on the success of the State support of CIL-IB. The report stated that by supporting one manufacturer of classic computer systems, the introduction of small machines into the marketplace has been impeded. With liberalisation a strong theme of IT Year, all users should be free to choose the best system available.

Fortunately nationalistic considerations do not appear to hinder the micro equipment marketplace. Apples, Pets and Acorns all compete freely in fighting off the emerging challenge of the IBM and Digital personal computers.

Meanwhile, the sooner the NCC stages a sales "grapevine" conference the better. Matching buyers with existing users would seem a far more effective method of selling than presenting courses for the keen and ambitious salesman.

Alan Simpson

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HUMAN TOUCH

Make it readable

THE purpose of writing is to communicate. To communicate the writing has to be readable. If the writing also has a pleasant appearance, that is a worthwhile although not essential bonus. Notice that when we talk of atrocious handwriting it is the readability that we are referring to — not its appearance.

Readers are spared my handwriting, the appearance of which I have never admired, but which typists have always seemed to interpret more accurately than even I can. And that is how it is if we have an important message to communicate. Typists and computers do the interpretation once and those that follow have an easier task. Or should have.

I say should have because the desire to improve the appearance of a typed or printed page is often made at the expense of readability. Typographers can produce fine designs that look nice and readable. But the research into the readability of typesetters is inconclusive.

Objective research shows that readability is a difficult area to study and subjective judgments (not just your own opinion) are as

good a guide as any. Then there is the question of electronic typewriters and word processors that produce a justified (printer's term for straight) right-hand edge. It looks nice but is often achieved on fixed-pitch machines by inserting extra letter spaces between the words.

You may have noticed how the eye and brain go into a little loop at those extra spaces. There is the question to be resolved of what those extra spaces mean.

They mean nothing, but the diversion to establish the fact loses concentration on the subject matter.

A single column down an A4 page is easier to put up and possibly more attractive than a two-column format. The single column is about six inches wide. Research and personal observation shows that lines over about 4½ inches long cause difficulty in reading.

The eye and brain go into a loop again to check that the correct new line has been picked up. It is disconcerting, slows you down and could probably lead to a loss of communication.

Cliff Dillaway

DOWNTIME

There's no substitute for the human fraud

ONE would imagine that the International Monetary Fund possesses a plethora of protective procedures to prevent programmed purse-plundering. But whatever electronic measures the IMF and the banking fraternity possess, they were not the match of an Iranian doing time in a Massachusetts prison for car theft.

All Koushastian phoned US bank Morgan Guaranty in the guise of Sheikh Abdul Aziz Qaravahi, head of the Saudi Arabian Monetary Agency. He said that his favourite nephew had been wrongfully imprisoned in Massachusetts and that money was needed to secure his release. \$18,000 was despatched to a Boston bank, and a few days later, \$28,500 was sent by express post direct to the goal.

The bank discovered its error, and the bogus sheik was sent to goal in New York to await trial. To while away the time, Koushastian rang the IMF, whose representative to the United Nations was so deeply moved by the "my



Boom time at IBM

POOR old IBM. Not only has it recently suffered the embarrassment of one of its employees allegedly shooting his workman in Bethesda, Maryland, but strange things have been going on at the San Jose, California plant.

A massive explosion, which could be heard 15 miles away, completely demolished one building and damaged several others. The plant purports to be the location of manufacture of 3370 and 3375 disc drives, but Chad wonders if there is not perhaps some top secret development going on there.

With the jolly giant's propensity for things aquatic — water cooling and so forth — it is possible that the next step has been taken on the inexorable path towards nuclear-powered computers? It is but a small step from having hot water flowing around one's processor, like some high technology bathroom, to harnessing the latent power held within the machine.

Push the CPU just that bit harder, heat up the water a fraction more, and bingo — steam-powered peripherals become a reality.

The big bang could be explained by the failure of the boiler on one of the future series prototypes.

An 'L' of a mystery

OUR roving photographer chanced upon this disturbing scene in Putney. On the roof of ICL House, mysterious figures were seen removing part of the company's illuminated sign.

Does this mean that Robb Wilmore's merry band are finally moving into the Portakabin in the car park? (Whole floors of the edifice are deserted as a result of the recent lay-offs).

But perhaps the decision has been taken to return to those halcyon days when Europe's leading computer manufacturer was backing in the warmth of the Indian summer of an Empire on which the sun never set.

Could there perchance be a large letter "T" on the roof awaiting fumes? There must be many traditionalists who would welcome the re-opening of the 1990 series production lines.

Oh, all right then, it is an old photograph, taken in 1962 when ICL came into being. Never let it be said that Chad disorients the truth.

First with news

INFORMATION on the Falklands conflict was available to reporters in the Whitehall Press Centre of the Ministry of Defence from a GEC videodata system. "Faster than any other news distribution system," claims a GEC publicity release.

Faster certainly than news from the lips of Ian "Dalek" McDonald, the defence spokesman.

10 YEARS AGO

From Computer Weekly of June 29, 1972

A HIGH-SPEED transatlantic link to one of the world's most powerful computer networks was established at London University Institute of Science, giving UK workers access to the ARPANET in the US. The government approved a purpose-built headquarters in Manchester for the National Computing Centre. The project had been under consideration since 1967, when the government agreed to provide £1,250,000 for the new building. Control Data entered the

market for plug-compatible main memory units with the announcement of the CDC 23000 range. A miniature visual display terminal using a revolutionary dot matrix with a dot matrix was announced by Burroughs. Known as the TD 700 Self Scan Terminal, it was claimed to be a new system, it was claimed to be 90% less "drive" electronics than a conventional VDU and priced at £1,200. Burroughs estimated that the terminal market would be worth £95 million a year by 1980.

ComputerWeekly

Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS

Thursday, July 1, 1982

World domination in technology

A REPORTER for a London radio station, admitting that he was out of his depth in trying to fathom the mysteries behind the latest computer crime that has allegedly taken place in Silico Valley, asked whether we Europeans should not feel insulted that the Japanese did not go after our technology secrets.

His question points to the inferiority complex that is gathering momentum in Europe. The words "Fifth Generation Project" send chills down the spine as the Japanese apparently prepare themselves for a world domination in technology that they were never able to attain through war.

But while the Japanese have been making great strides in bringing their technological base on to a par with the West, there is no reason to believe that they will ever hold a grip on the ideas of the next computer generations.

Why would two Japanese companies, Hitachi and Mitsubishi, as alleged, be willing to take such enormous risks and pay such large sums of money — over half a million dollars, it is said — to steal trade secrets from IBM? One might as well ask why the Russians and the Americans and the British make such efforts to put double agents inside each other's intelligence forces. Unsavoury as these activities are, it would be naive to think such things are not going on.

□ □ □ □

As the Americans would say, the Japanese are playing hardball. That quaint expression derives from the American national game, baseball, which can be played in two versions: one is with a big soft ball about the size of a grapefruit which weeked dabbblers can throw and hit about without much worry of sustaining any injury; and the other is played by professionals with a rock hard projectile about the size of a tennis ball which is hurled about at speeds of over a hundred miles an hour.

American businessmen have always played hardball. One sometimes thinks that they take it all a bit too seriously — it is really necessary to have meetings over breakfast at 7am — an habitual pastime in the US. But the rather desultory approach to producing and marketing products that is so common in the UK surely needs to be reappraised.

The Japanese make no secret that they consider themselves the great imitators, not the great innovators. As a nation short of natural resources, they have recognised that an enormous effort is called for if they are to play a significant part in the world economy.

It is unfortunate that part of that effort seems to involve illegal activities. When the stakes are high, morals always seem to suffer. UK businessmen, for example, complained bitterly when President Carter's administration attempted to put a clamp on the use of bribes when seeking tenders in world markets, particularly the Middle East.

□ □ □ □

But the action by high-ranking executives from Hitachi and Mitsubishi is bound to push industrial espionage and other illegal business activities into new ground. The suggestion that the intelligence gathering operation was co-ordinated by MITI, Japan's Ministry of International Trade and Industry, is likely to intensify efforts to isolate Japan.

That would be a mistake. Trade barriers serve only to hide and eventually exacerbate individual companies' weaknesses. Pressure to ensure that Japan makes its own markets more open should continue, but the James Bood-like escapades in California should not serve as an excuse to shut the Japanese out of world markets.

As for the crime itself, it should not go unpunished. But there is a certain pessimism about whether anything will change.

It is trite to say it, but the lust for money and security — in this case national security for the Japanese — will probably never feel bound by a high ethical standard.

1984 and all that . . .

CONTRIBUTIONS are welcome for our column of the strange things people say about computers. We will pay £5 for each item we publish.

They do not have an O-level amongst them, hardly a CSE, and within six to nine months they were trained to be computer programmers capable of doing electronic assembly.

Kenneth Baker, in a speech to the Institute of Directors

LETTERS

St Andrews is thriving

WITH reference to your article "Cuts could damage research permanently" (CW, June 17) your statement concerning St Andrews University Computational Science Department is totally untrue. The Department is not only thriving but is the one department in the Mathematical Studies Group which has been singled out by the University Restructuring Committee in its restructuring plan as a department which "cannot be allowed to run down".

The University has recognised

in this document the importance of both computer science and electronics as potential growth areas.

I appreciate that your report came from "another source" but suggest that in future you verify the accuracy of such sources before publishing potentially damaging statements of this sort.

Professor A. J. COLE
Department of Computational Science,
University of St Andrews,
Scotland.

Investment in West

I READ with dismay the concluding paragraph of the article (CW, June 3) dismissing the West country town of Avon as an area for attracting high technology investment. This is patently untrue and I would draw to your attention that Texas Instruments, Plessey, British Aerospace, M. L. Engineering and Tealemit which operate in this field have done so for some time most successfully from Plymouth.

Graham Jones
City Estates Surveyor
Civic Centre,
Plymouth.

Liveware File

by Don

WHEN I WAS A KID,
ALL WE WANTED WAS...



...NOWADAYS EVERY KID
WANTS HIS OWN...



...A LOAN OF SOMEONES
"VICTOR" OR "DANDY"...



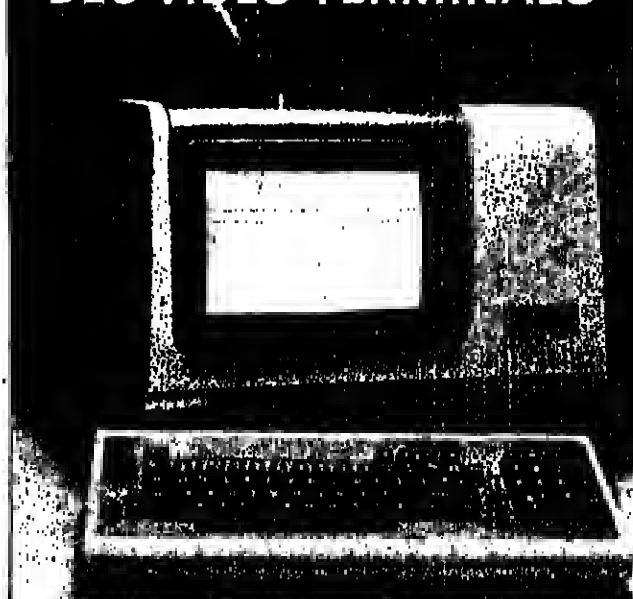
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COMPUTASTARS - MIDLANDS HEAT



Blackwell's Susie Pitt tackles the rugby event.



Kalamazoo 2's Malcolm Shuttleworth poised for the football throw-in.

Kalamazoo sweeps the boards and the sponsor is left standing!

THERE is only one name to report at the end of the fifth and final regional heat of this year's Computastars - Kalamazoo. Its entrants came top of the 23 men's and six women's teams competing in the Midlands heat, held on Saturday at Birmingham's Alexander Stadium, and also provided the male and female individual winners.

The strength of their performance augurs well for Kalamazoo as training is completed for the UK national finals to be held at the same Birmingham stadium on Saturday, July 24. With a clutch of medals and the men's UK and European champion Jeff Harrison from last year, they must start favourites for 1982.

Sponsor Computer Weekly put in its first appearance at Computastars this year, and was modestly placed 19th.

Computastars is the nationwide sports competition for DP professionals sponsored each year by Computer Weekly. This year it has grown to cover five regional heats whose top placings among the five member teams of men or women make up the 32 male and 15 female entrants to the finals.

Both teams and their leading individual member will then compete for Computer Weekly trophies as well as the right to go forward to European finals, to be held this year in Brussels on October 10.

Kalamazoo is a company with a particularly enlightened and enthusiastic approach to sport, for its employees. The depth of talent released into Computastars was such that the men's second team, entering for the first time this year, itself finished third and qualified for the finals.



Sponsored by Computer Weekly

After four of the eight events last weekend, the men of Kalamazoo 1 had overcome a slow start to edge ahead of Midland Household Stores 1. With three of the day's four ball events behind them - football-style throw-ins, rugby-style kick, catch and run, and golf putting - they were able to make speed and fitness count. A two-point lead after the bench vault was boosted to 16 points with a sparkling performance in the 100 metres sprint.

Each event calls for performances from three members of each team, one of whom also competes for the individual award. By carefully balancing the demands of speed and stamina a well-balanced team with a star individual, who must take part in all eight events, can overcome strong performances from opposition teams in a particular sport.

In fact, Kalamazoo won only three of the day's eight events - the sprints, bench jumps and steeplechase - but by the end of the day had opened up a 37-point lead on a strong Midland Household Stores 1 team.

With Kalamazoo 2 working its way up to finish third, a highly charged battle developed for the remaining two places to the finals. Added edge was given by the fact that the co-ordinators included Barclays Bank and Barclaycard, who showed almost as much eagerness to beat each other as to topple outsiders.

A winning performance by Barclays Bank individual Number One Phil Huddy in the steeplechase finally allowed his team to edge ahead of Barclaycard. The two will now gear up to rejoin battle in the finals.

The men's individual competition saw 1981 champion Harrison pressed right to the end by Midland Household Stores' Glyo Heaketh. The retail chain's star led from early in the day right up to sixth event, when a gritty performance by Harrison on the bench jumps pushed him through to the lead.

Heaketh could not close the gap in the steeplechase, one of Harrison's best events, but still qualified for the finals along with Barclays Bank's Phil Huddy, Kalamazoo 2's Malcolm Shuttleworth and Barclaycard's Mike Fromant.

New this year was a special path to the finals for small units and veteran (aged over 35) teams. Of the four small units entered in Birmingham, Sandvik finished a highly creditable eighth, helped in large measure by a sterling performance from their Number One Neil Warland. He finished equal fourth just two points behind second-placed Heaketh.

Computer Weekly, put to shame by rival comments from competitors in previous years, sent along production assistant Roger Albu-

rey (Number One), consultant sales manager Chris Prier, micro editor Robert Parry, senior reporter Kevin Pearson and publisher Simon Timm, to answer the wags.

A result of 19th out of 23, just four points ahead of the veteran BL Systems 4 team, did not win any awards for the sponsors. But team members claim it acts as their marker for next year.

Kalamazoo's women's team built a nine-point lead after the first event up to an emphatic 61-point margin by the end to cruise easily into the finals. There they will meet old rivals Legal & General, this year without twice gold medalist Bridget Cuthill, to rejoin their rivalry.

In the individual competition, Kalamazoo's Alison Grant was pressed hard by Scion's Jan Byre. The bureau's star trailed nine points at the end of the morning, behind Grant and BL Systems' Janice Smith.

She fought back to within three points after winning the sprint and bench jumps, and at that stage was Grant's only serious danger. But she was unable to catch the 1981 European bronze medalist, who finished a comfortable six points clear to ensure a clean sweep for Kalamazoo.

For details of Computastars contact the organisers, Gordon and Maureen Cairns, at Computastars Ltd, 117B High Street, Croydon CR0 1QA. Tel: 01-488 6690.

Computer Weekly would like to thank Commodore Computer for providing a system to calculate the results at each stage of this year's Computastars.

MEN'S TEAM RESULTS				
Rank	Name	Points	Total	
1	Kalamazoo 1	29 36 35 33 41 33 38 40 20 27	301	
2	Midland Household Stores 1	30 45 31 27 27 30 29 31 25 20	250	
3	Kalamazoo 2	34 18 30 38 29 33 31 32 24 5	245	
4	Barclays Bank	30 42 37 21 29 24 26 33 24 2	242	
5	Barclaycard	25 36 24 34 27 43 23 38 28 6	236	
6	Open University	16 30 29 25 28 42 25 30 22 5	225	
7	BL Systems 3	23 42 27 24 21 36 26 22 21 1	221	
8	Sandvik (S)	26 36 36 24 23 27 21 25 22 0	220	
9	Blackwell 1	26 42 27 24 21 36 26 22 21 1	213	
10	BL Systems 2	17 30 24 23 27 33 26 29 20 9	209	
11	Littlewoods	11 21 32 26 23 36 23 27 20 1	201	
12	British Aerospace	21 24 30 18 28 39 16 22 19 0	190	
13	Fog Robinson	23 31 27 20 22 6 24 19 17 8	189	
14	Grand Met 2	28 30 25 14 21 30 19 21 18 8	188	
15	NEI APB	20 24 28 18 22 30 18 20 18 0	180	
16	Blackwell 2	21 39 27 20 22 6 24 19 17 8	178	
17	Data 100	23 31 27 20 22 6 24 19 17 8	177	
18	Computer Systems (S)	11 27 23 19 22 9 25 13 16 3	163	
19	Computer Weekly (S)	23 9 27 18 23 13 21 15 16 1	161	
20	BL Systems 4 (V)	10 10 33 14 14 27 19 14 15 7	157	
21	Fisons	13 21 24 23 16 6 24 19 17 8	156	
22	Grand Met 1	16 6 32 14 23 13 19 22 14 4	144	
23	Credon Computing (S)	17 6 27 10 18 9 18 16 12 9	129	

MEN'S INDIVIDUAL RESULTS				
Rank	Name	Points	Total	
1	Jeff Harrison (Kalamazoo 1)	5 12 10 13 13 11 14 14 9 2	92	
2	Glyn Heaketh (MHS 1)	12 15 7 10 11 10 9 12 8 6	86	
3	Phil Huddy (Barclays Bank)	9 14 11 8 11 8 9 13 8 5	85	
4	Neil Warland (Sandvik)	10 12 9 10 13 9 9 12 8 4	84	
5	Malcolm Shuttleworth (Kalamazoo 2)	13 6 9 12 10 11 11 10 8 4	84	
6	Mike Fromant (Barclaycard)	5 12 10 9 11 15 9 12 8 3	83	
7	Colin Worthington (BL Systems 2)	9 10 9 8 13 11 9 13 8 2	82	
8	Chris Slack (Open University)	4 10 9 10 12 7 10 12 10 0	80	
9	Orkham Howard (Brit Aerospace)	7 8 11 9 9 13 8 11 7 6	76	
10	Stewart Russell (BL Systems 3)	8 14 9 9 7 12 9 7 7 5	75	
11	Mike King (Blackwell 1)	11 14 9 8 11 3 9 7 7 4	74	
12	Phil Symons (Fog Robinson)	11 8 12 9 13 4 8 7 7 2	72	
13	George Holmes (Data 100)	11 7 10 9 9 2 11 11 10 7	70	
14	Alan Carter (Littlewoods)	7 7 8 8 7 12 8 10 6 6	67	
15	Adrian Smith (Blackwell 2)	9 13 8 8 8 2 8 6 6 6	62	
16	Garry Deany (NEI APB)	8 10 10 7 4 7 10 6 6 5	60	
17	Garry Kayworth (Grand Met 2)	1 9 12 3 0 3 0 3 9 9 3	36	
18	Kevin Morris (Computer Systems)	4 7 7 10 7 2 11 8 3 3	36	
19	Hugh Allen (Fisons)	4 7 7 10 7 2 11 8 3 3	36	
20	Roger Albury (Computer Weekly)	3 1 8 8 7 5 8 9 4 9	49	
21	Nick Meadows (Grand Met 1)	6 6 9 4 2 9 7 3 4 8	48	
22	Phil Smith (BL Systems 4)	4 2 7 8 6 3 7 3 3 4	42	
23	Chris Collins (Credon)	4 2 7 8 6 3 7 3 3 4	42	

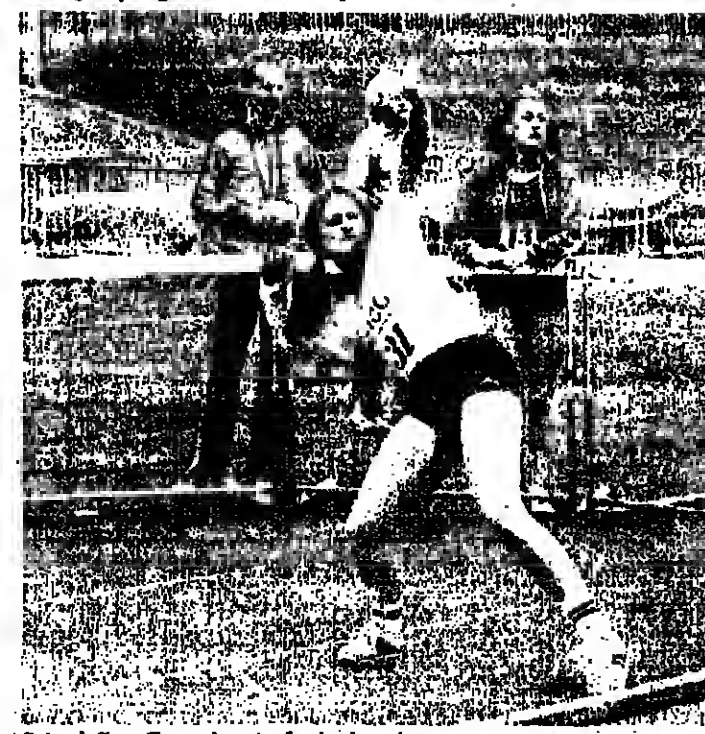
WOMEN'S TEAM RESULTS				
Rank	Name	Points	Total	
1	Kalamazoo	28 39 36 43 37 43 34 39 30 1	301	
2	Scion	19 27 23 33 31 33 36 33 23 9	239	
3	BL Systems	18 43 24 20 18 21 27 18 19 1	191	
4	Blackwell	14 6 29 20 24 10 20 12 14 6	146	
5	Open University	12 24 17 21 13 21 21 13 14 2	142	
6	Midland Household Stores	19 18 30 10 22 6 13 10 12 8	128	

WOMEN'S INDIVIDUAL RESULTS				
Rank	Name	Points	Total	
1	Alison Grant (Kalamazoo)	3 13 13 15 15 12 14 15 10 5	105	
2	Jan Byre (Scion)	8 9 10 12 15 11 15 15 10 1	93	
3	Janice Smith (BL Systems)	9 13 5 11 6 7 11 7 7 1	71	
4	Susie Pitt (Blackwell)	2 2 8 9 14 6 6 9 7 5	57	
5	Judith Lawton (MHS)	9 6 4 5 3 3 2 6 8 3	53	
6	Gerry Vale (Open University)	2 8 4 4 3 1 7 6 8 4	43	

Events are (left to right): throwing, rugby, putting, vault, 100 metres, hockey, jumps and steeplechase. S denotes a small unit and V denotes a veteran team.



Taking the plunge in the dreaded steeplechase.



Scion's Jan Byre takes aim for the throwing event.



Kalamazoo's Alison Grant.

Through to finals

THE full list of qualifiers for the 1982 Computastars UK finals, to be held at the Alexander Stadium, Perry Barr, Birmingham.

MEN	
1	Computer
2	Thorn EMI
3	Digital Equipment 2
4	Rank Xerox
5	Legal & General 1
6	Rowntree Macintosh 2 (V)
7	Midland Household Stores 1
8	Kalamazoo 2
9	National Provident 2
10	London Borough of Barnet 1
11	Gommes Byass (S)
12	CMC
13	Ford Motor Co
14	Rowntree Macintosh 1
15	Sandvik
16	Barclays Bank
17	Legal & General 3 (V)
18	FMSL
19	Commercial Union
20	British Aerospace
21	Sheffield Insulating (S)
22	Barclay Card
23	Royal Leamington
24	Kalamazoo 1
25	Barclays International
26	London Borough of Barnet (V)
27	London Borough of Lambeth
28	Butterworth
29	Barclays Bank
30	National Provident
31	Heywood & Partners
32	BL Systems

WOMEN	
1	Digital Equipment
2	GCS Cambridge
3	Saga
4	Mail Order
5	Rowntree Macintosh
6	BL Systems
7	Kalamazoo
8	Scion
9	Case
10	Bascom
11	Rank Xerox
12	Thorn EMI
13	Bank of America
14	Barclays Bank
15	Legal & General

THE next round of Computastars - the UK national finals - will be held at the Alexander Stadium in Birmingham on July 24. Thirty-two men and 15 women's teams will fight for place, and the chance to go to the European finals.

PROGRAMMERS PAGE

Prolog - logic programming language of next generation

MANY will not have heard of the computer language Prolog. But you soon will. It is one of the logic programming languages selected for research and development by the Japanese Fifth Generation Computer Systems (FGCS) project.

Meanwhile ICL, which has decided to base much of its fifth generation strategy around a mainframe built by the Japanese company Fujitsu, is investigating the use of Prolog, and logic programming languages in general.

ICL is particularly interested in a version being developed by the computer laboratory of Imperial College for its CAPS controller, which allows selected data records to be diverted into core as they come off disc. Discussions are in progress, and 16 senior ICL staff attended a course given at Imperial College last week.

According to Robert Kowalski, who leads the Imperial College Prolog team, ICL's interest goes beyond CAPS, and extends to a whole range of future applications for logic programming in general, looking ahead to the fifth generation.

Certainly the degree of interest shown in Prolog so far by ICL speaks of a serious intent to bring it on board.

Implementation on ICL's CAPS would be Prolog's introduction to the worldwide commercial marketplace. But although its commercial uses are as yet limited, its range of applications reads like a roll of honour.

Its uses so far include compiler writing, mathematical theorem proving, computer aided design, natural language query systems and a commercial program for handling the spare parts in a warehouse.

In a paper to be presented at the SPL Fifth Generation Conference in London next week, Kowalski describes Prolog as a modest yet powerful realisation of the wider logic programming ideal.

It is based on the Horn Clause system developed in Marseilles in 1975. A Horn Clause is a procedure.

The simplest sort of Prolog statement consists of a relationship between two things, as in John likes Mary. Here the relationship is the verb "likes".

Of a database containing just this one statement, the simplest form of enquiry, requiring answers of "yes" or "no" could be made: Does John like Mary? The system would reply in the affirmative.

Queries more often contain variables standing for unknowns. For example:

Which (x John likes x). The answer from our simplest database would be, of course, Mary.

Were the database also to contain the two statements:

John likes Joan
Joan likes dog

a compound query could be made as follows:

(Which (x John likes x and x likes dog))

The answer would be Joan, but not Mary.

The real power of Prolog, however, lies in its ability to embrace recursion, or self reference. An example of a recursive definition is: Mary likes x if x likes Mary.

With such recursive definitions, unwary programmers can get caught in infinite loops. For example, suppose a database contained the above recursive definition together with the simple definition:

Jack likes Mary

It might then be expected that the query:

Which (x Mary likes x)

would elicit the answer Jack, because of the proviso that Mary likes x if x likes Mary. Not so. In fact the

query would reduce a problem to two sub-problems, which in general can then be solved in parallel. With Prolog, parallel processing is not yet possible - indeed it has so far been implemented only on conventional von Neumann computers.

A typical Prolog program consists of a sequence of definitions and equivalences, which may be linked by the boolean connectors AND and OR.

Those who doubted my statement that computer manufacturers fall over themselves trying to help customers who have experienced fires, floods, and similar disasters - scoff no more. Brewash Borough Council in Derbyshire uses a 128K CMC Reality minicomputer linked to IBM mainframes at the county council's headquarters at Matlock.

According to Susan Wiberley, in charge of the Brewash machine room, between 6.30 and 7am on Tuesday, May 18, a coiled main cable powering a modern overhead and caught fire.

"The computer room was in a terrible state and the Reality was severely damaged, mainly by smoke, but there was fire damage too."

The fire was discovered by the caretaker who summoned the fire brigade. Luckily, the heat-resistant doors to the machine room were both considered unsuitable for use, and another room nearby was commandeered as a replacement.

"We didn't have a fire detection system or halon flood," says Wiberley, "and we lucky that the fire was discovered so soon."

At 9am Brewash Council phoned CMC's Birmingham office, and an hour later CMC staff were on site assessing the damage. The Reality and the machine room were both considered unsuitable for use, and another room nearby was commandeered as a replacement.

Within two days, another Reality and six intelligent terminals had been installed in the new room, and the system was fully operational by Friday, May 21.

"We only lost part of one day's work on some accounts," says Wiberley. "All the files were backed up in the fire safe."

Computer companies can be very helpful indeed.

Full marks to CMC for its performance.

Now where did I leave my orange smoke?

JOB SHARKEY
33 Woodcroft Avenue
London NW7

I hope that will suffice for all the would-be Adventure disseminators out there. Please don't send anything to me; we already get more mail than can be read by one person in a day. Send everything to Mr Sharkey, who sounds like a jolly good egg - even if he can't read my name at the top of Op Spot.

Prolog interpreter would go into an infinite loop.

This is because the program keeps on trying to show that Mary likes Mary if Mary likes Mary, which is carrying recursion too far in my opinion.

To find out who Mary really does like, the question has to be rephrased to something of the form:

Which (x,y, x likes y and x not y)

As well as its present inability to feed parallel hardware, the Imperial College Prolog is blemished by its lack of facilities for some basic operations such as FETCH and ADD. These have to be implemented with software that does not conform to the basic Prolog structure.

At Imperial College, such blemishes of the pure Prolog form are jargonised as "dirty Prolog".

Arithmetic and file handling are two areas, and vital ones at that, in which Prolog does not work too well.

It is ideal, however, as a teaching language, and indeed Imperial College has been using it for teaching logic to schoolchildren from the age of 10. Kowalski maintains that children have no problem with the abstract notion of recursion once it is stripped of all the semantics in which it is usually cocooned.

Jonathan Briggs is one of the third year students of Imperial involved with Prolog, and he has just completed a project involving the schoolchildren.

The children use a simplified form of Prolog which is compiled into a micro-Prolog running on Z80 microcomputers under the CP/M operating system. There is now a prototype of the micro-

Prolog makes it easy to see why ICL is so interested in it for CAPS, which provides the user with ability to make fast enquiries of a database held on disc.

Prolog, which grew from ideas developed in automatic mathematical theorem solving, clearly needs to live a few more years before reaching its full maturity. But in some applications, particularly teaching children, and database enquiry, it has already given copious fruit.

Even a superficial knowledge of

THIS diagram represents 45 discs placed on a 7 x 7 "chessboard" type grid, with four of the squares empty. The task is to remove 35 discs in such a way that the remaining 10 form five lines of four-discs-in-row.

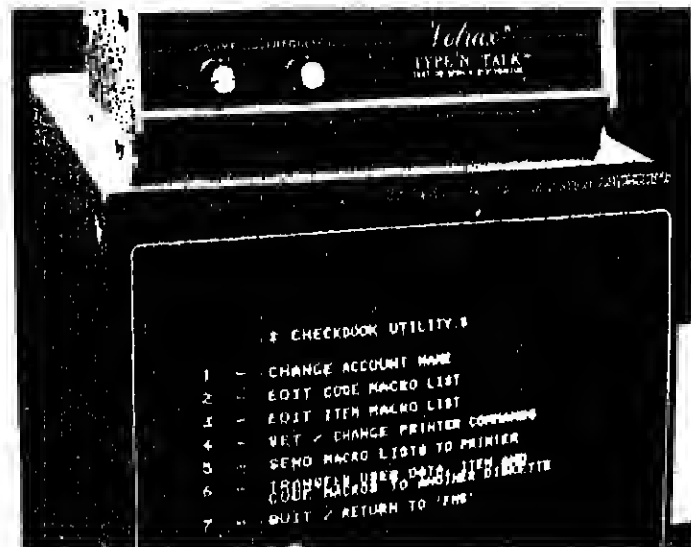
By "in-a-row" we mean horizontally, vertically, diagonally or obliquely (i.e. a Knight's move away from each other). See page 39 for the only solution.

by Andrew Thomas

CMC turn out to be hot stuff as disaster strikes in Derbyshire.

CMC turn out to be hot stuff as disaster strikes in Derbyshire.

CMC turn out to be hot stuff as disaster strikes in Derbyshire.



The Type-N-Talk

The talking computer

A DEVICE that allows computers to speak whatever is typed in on a keyboard, is available from Intelligent Artefacts, a division of Sanda Whiteley of Orwell, near Cambridge.

Known as the Votrax Type-N-Talk, it can be used with most computers, and has unlimited vocabulary.

It is operated by typing English text and a talk command. Typewritten words are automatically translated into electronic speech by the unit's microprocessor-based text-to-speech algorithm.

In teaching, the computer with Type-N-Talk can be used in spelling tests. It can also help the blind with studies allowing them to use computers for the first time.

Sanda Whiteley Research and Development (CW), Cambridge Road, Orwell, Royston, Herts.

Tape buffering and switching on STC 4500

STORAGE Technology claims an industry first with the introduction of the STC 4500 buffered tape control unit for IBM-compatible processors.

The new 32 Kbyte buffering feature significantly increases the throughput capability of tape subsystems, especially when attached to data streaming channels. For example, when using 125 inch-per-second drives, the throughput capability of each tape channel increases from 780 per second to well over 1,560 Kbytes per second. Buffered tape control units also achieve higher effective data rates while using fewer dedicated channels.

The feature allows certain other types of peripherals to co-exist on the same channels as the new STC 4500 control unit without the serious degradation associated with non-buffered controllers.

The new controller incorporates a high-speed 32 Kbyte buffer that accepts commands from the host CPU. The controller then disconnects from the channel, leaving it free for other operations, while it manages the movement of data to or from the tape drives.

In the case of a read operation, a set of dynamic buffer management algorithms determine the optimal time to re-attach to the channel. Upon reconnection, data is transferred at maximum channel rates, up to three Mbytes per second, rather than at drive speed.

The buffered system maintains absolute data integrity on write operations by not presenting ending status signals to the system until all data is safely recorded on the tape.

The purchase price is \$12,000. It is also available for \$321 a month based on a 36-month lease period.

Storage Technology Corp (CW), 2770 South 88th Street, Louisville, Colorado 80027. Tel: (303) 673-5151.



New from Dennison

Airlines terminal launch

A LOW-COST terminal designed for airlines using IBM-based passenger reservation systems is announced by Sperry Univac. Known as the UTS 4000 PARS Airlines Terminal, it is compatible with the IBM PARS/ALC communications protocol.

The UTS 4000 is equipped with a customised airline application keyboard, special microcode and a new low-cost multiplexing technique. These features are designed to provide an efficient solution to the terminal needs of PARS and ITPARS airline system users around the world.

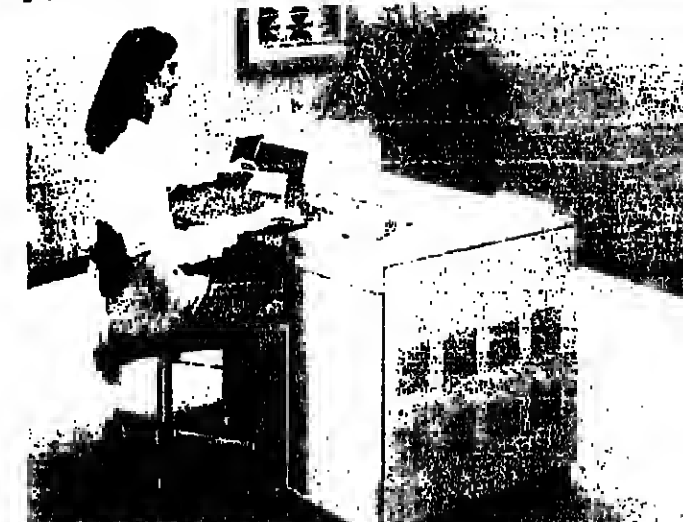
Other features include response time measurement and reporting, communication error rate logging and reporting, supervisory monitor, down line parameterisation and configuration control, and buffered loop back operation for both diagnostic and high volume load testing operations.

Sperry Univac (CW), Stonebridge Park, North Circular Road, London NW10 8LS. Tel: 01-965 0511.

Read errors eliminated

ONE of the major floppy disc manufacturers in the US, Dennison, is introducing in the UK a high quality diskette. It is manufactured and tested to magnetic quality standards that eliminate formatting or read errors.

Media Technology (CW), 38 Mount Pleasant, London WC1X 0AN. Tel: 01-278 7465.



Burroughs S600 document encoder

Burroughs steps up its attack on office market

BURROUGHS aims to capture at least 50% of the UK document processing market, and has added two systems to its range.

The S600 is a combined OCR/MICR high-speed document encoding system entirely developed and manufactured at Burroughs' new plant in Livingston, Scotland.

The second new machine is the Burroughs S6000 which is a multi-purpose MICR/OCR document reader/sorter, processing up to 545 documents a minute. It is priced from around £50,000.

Burroughs MacInnes Ltd (CW), Heathrow House, Bath Road, Hounslow, Middx.

GEC adds 32-bit mini to range

GEC Computers has added a 32-bit minicomputer to its 4000 Series. Designated GEC 4190, it uses 64K RAMs contained within the CPU, providing modules of one megabyte of main memory on a single board.

The machine is thus reduced in size to two cabinets. In a typical four-Mbyte system, for example, the GEC 4190 takes up only one third of the space of the GEC 4090. And this compactness means that power consumption has been reduced in some cases by as much as 70% says GEC Computers.

Price reduction is seen by the company as the most significant selling point of the new machine.

On a four-Mbyte system, for example, it claims there is a price reduction of as much as £78,000. The basic store boards are designed to cater for 256K RAMs, so that when these components become cost-effective it will be relatively simple to build 16Mbytes of main store into the CPU, says the company.

GEC Computers Ltd (CW), Elstree Way, Borehamwood.

Winchester subsystem 'cuts development time'

INTEL'S Model IMDX-750 Inteltec Winchester Subsystem is available from Marconi. The unit consists of a disc drive and power supply enclosed in a free-standing peripheral chassis with an intelligent disc controller, interconnecting cables and documentation as part of the package.

The subsystem provides online high capacity storage which, says the company, should substantially improve system throughput and reduce development time. The IMDX-750 is said to offer considerably faster disc access speed and

data transfer rate than the earlier Intel Model 740 cartridge disc system, with the disc providing 10%-50% better system throughput.

The Winchester disc provides 22 Mbytes of formatted storage with a data transfer rate of 6.4 Mbytes/sec, while the controller provides direct interface to the Intel system bus. The subsystem is used in conjunction with the Intel 11(W) Operating System, which provides file management capabilities, file editing, library management, run-time support and utility management.

Included with the system is an Inteltec system archival utility which allows the user to back-up the Winchester disc on flexible diskettes.

It is also designed to be compatible with Intel's soon-to-be-released magnetic tape cartridge system which will have a faster and higher capacity archiving rate.

Marconi Electronic Devices Ltd (CW), Distribution, East Lane, Wembley, Middx HA9 7PP. Tel: 01-904 9303.

Mini printer for pocket micros

CASIO has introduced the FP10 mini electric printer for use with its pocket microcomputer systems. Compatible with the Basic-language FX702P hand-held computer and the earlier FX601P and FX602P alphanumeric programmable calculators, FP10 gives hard copy printout of results, and can be used to list program steps and memory contents.

Printing is at a rate of two lines a second on 35mm wide metallised recording paper - the unit employs an electric discharge printing system. Line length is up to 20 characters, with clear legibility says Casio, since FP10 uses the same 7x9 dot matrix as the LCDs.

Connection to the programmable calculator is either direct or via the FA2 cassette interface.

Casio I/P10 is barely pocket size at 43½ x 157½ x 82½ mm, weight with batteries 372 grams. It comes complete with a set of manganese batteries and a supply of paper at recommended retail price of £39.95.

Casio Electronics Co Ltd (CW), 1000 North Circular Road, London NW2 7JD. Tel: 01-450 9131.

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When the first Computer Fair was held in London in April this year, 38,500 people crammed into Earls Court to see the latest advances in small business and home computers.

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Local computer clubs, software houses and the manufacturers and distributors of personal computers will have the opportunity to meet with the growing number of business users and enthusiasts in the North.

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A version with 12-character display.

Pocket range addition

A MORE powerful unit has been added to the Pocket Terminal range of portable keyboard controllers manufactured by GR Electronics of Newport, Gwent.

The new Type 12 Pocket Terminal offers a 12-digit, 16-segment LED display, against the 8 digits of the established Type 8 unit. Signalling speeds are 300 and 1200 baud against 110 and 300 baud,

and an offline EDIT mode allows a message to be entered to the 32 character capacity of the memory, then transmitted as a block. Full cursor insert/delete facilities are provided in EDIT mode.

GR Electronics (CW), Fairbro House, Church Road, Newport, Gwent NP23 7BJ. Tel: (0631) 214147.

Designed for operator comfort

RAIR Terminal Division has launched in the UK the Model 940 video terminal, which is claimed to combine the power of an editing terminal with the convenience of video display.

Designed for operator comfort and ease of operation, the Model 940 features advanced editing capabilities and state-of-the-art design to reduce operator fatigue often associated with video terminals.

The keyboard is designed with functionally clustered keys which are divided into typewriter, numeric, editing and function keys to reduce training time and increase operator productivity.

The Model 940 features a 128 displayable Ascii character set with a 7 x 9 dot matrix font in a 7 x 11 cell, permitting true descenders for high quality legibility.

Price of the Model 940 is £1,180.

Rair Ltd (CW), 69 Upper St Martins Lane, London WC2H.

Full graphics terminal from PHL

AN enhancement to the TAB 132/15 Video Display Terminal which it is the UK exclusive distributor is introduced by Peripheral Hardware. The TAB 132/15 display terminal previously had a business graphics facility, and now a full graphics version has been introduced.

This feature allows for a line to be drawn from any individual dot within the screen to any other individual dot. There is no longer a specified character cell - as for example the 9 x 4 in the alpha model. Instead the screen is rearranged so that it is on a large plot of 512 x 384 bits with each bit addressable.

The new full graphics facility emulates completely the Tektronix 4010 Series terminals and certain features in the TAB terminal are also in the Tektronix 4012, 4013 and 4024.

Peripheral Hardware (CW), Armfield Close, West Molesey, Surrey. Tel: (01-841) 8800.

Terminal emulates Tektronix

THE Tab 132/15-G interactive graphics terminal, which emulates Tektronix 4010 and selected Tektronix 4027 graphic commands, is now available from Peripheral Hardware.

The unit is fully compatible with Ascii, DEC VT52, VT100 and VT132, and allows the production of multiple character size graphics such as dot-dashed lines, point plotting, vector and arc drawing, circle and polygon drawings, and selective erase for ease of updating.

The terminal has a range of text manipulating functions including full Ascii and APL, 90 degree text rotation, proportional spacing, and italics. All the graphics facilities are local in origin and therefore have a quicker response than if they were dependent on a host computer, says Peripheral.

The graphics characters are defined by height, width, line angle or proportional spacing. The operator can define arc lines by specifying only the centre point and radius. Any closed space is automatically filled and there are independent format modes for solid, dotted or dashed lines.

Peripheral Hardware Limited (CW), Monkshead Industrial Park, Shirley, Solihull, West Midlands. Tel: 021-745 3033.

Black box translator

INCAA's programmable interface translator, PIT, is a "black box" with only a single control switch and a pair of D-connectors. All aspects of asynchronous and asynchronous communication are programmable: transmission speed, parity, databits, X-on/X-off, block length, handshake signals, says Incaa.

Code conversion is programmable, eg Ascii to Baudot, EBCDIC to Ascii, etc. String conversion allows the conversion of a single character to a string of characters and vice versa.

Incaa UK Ltd (CW), PO Box 66, Cheltenham, Glos GL51 5BJ.

1,200 bps modem

ANDERSON Jacobson has launched the AJ 1222, a modem for data transmission at 1200 bps in full duplex mode over the Public Switched Network.

The device is microprocessor controlled and meets all three alternatives A, B and C of CCITT recommendations V22, giving the data communications manager an extremely wide choice of operating configurations, says the company.

Anderson Jacobson Ltd (CW), 752 Deal Avenue, Slough, Berks.



Attwood's portable data capture unit.

Data capture for the layman

THE Attmatic (above) is a data capture unit developed by Attwood Electronics. It has been specifically designed for operation by the non-computer specialist and can be tailored for applications from commercial (e.g. stock and production control) to on-site scientific data collection, says Attwood.

A feature of the Attmatic is the visual and audible prompting sequence which guides an operator through the cycle of data collection.

Attwood Electronics Ltd (CW), Netherfield, Berkhamsted, Herts, HP4 2PC. Tel: Berkhamsted (04427) 2291.

COMPEC SCOTLAND

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The highly successful Compec exhibition of computers, systems, peripherals and software is to be held in Scotland for the first time this year.

Compec Scotland in Glasgow between September 7-9, 1982 will allow companies selling into this important market to focus on computer users throughout the country.

Surveys of visitors to computer exhibitions demonstrate that users prefer to attend a show which is local to them. Compec North was enthusiastically welcomed in Manchester last year, and has expanded for the 1982 event in June.

Now Compec Scotland with a venue in the centre of Glasgow ensures a place at the heart of another key market.

For information about exhibiting at Compec Scotland contact Chris Timmins, Executive Director, IPC Exhibitions on 01-643 8040 Ext 4869. Or clip the coupon.

Please send me details of exhibiting at Compec Scotland.

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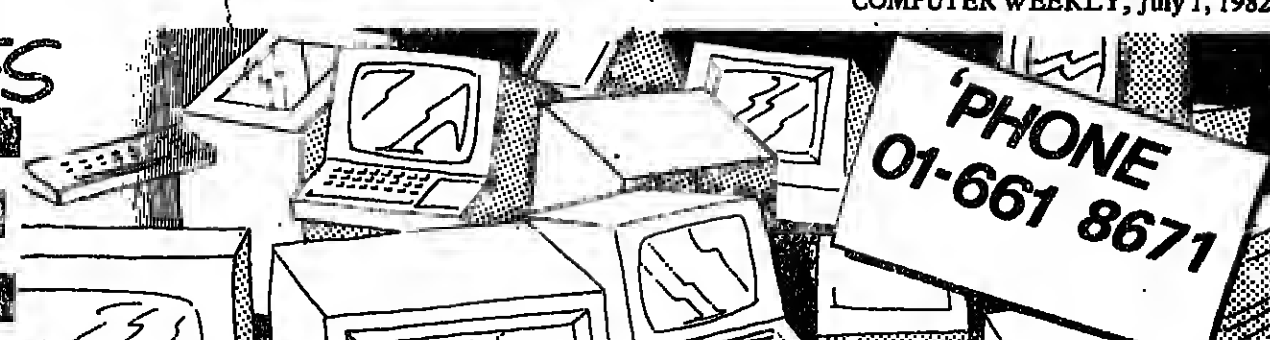
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The Computing Division of the Rutherford Appleton Laboratory provides a service for SERC sponsored research in Universities, Polytechnics and SERC Establishments. It is equipped with the two IBM 3890/3895 and an IBM 3032 which provide the main data processing power, and PRIME, IEL and IBS mini-computers for interactive work. It manages and supports a large number of such users in Universities through an X25 network. There is a planned programme of procurement to maintain a modern computing service and the use of personal computers is being developed with the ICL PERQ.

A vacancy exists in the User Interface Group for a Support Programmer/Technical Writer. The successful applicant will work as part of a team responsible for providing documentation, training and support for users of the Computing Services. There will be involvement with the development of new services such as UNIX, and the enhancement of existing services, particularly with the conversion of modern manufacturer-supported operating systems such as MVS/JES3. The major responsibility will be to ensure a high standard of documentation. In addition, he/she will be expected to take part in the program advisory and training activities of the section. Applicants should have a degree in Computer Science or related subject and should have skills in Technical Communication, being able to select material appropriate to a diverse user community. They should also have a broad knowledge of computer systems and the documentation which supports them. They should have some programming experience, preferably FORTRAN, and knowledge of a modern Operating System such as OS/MVS, VM/CMS or UNIX would be helpful.

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Our clients, a major British Company of long standing overseas provide a wide range of services in the field of port management. They seek a Systems Analyst who will be required in the planning and design stage of a major port document handling system using DEC PDP 11/70 equipment under MUMPS. The post also involves working on associated systems employing a DEC Computer and T1990/12.

The successful applicant, aged 30-45, will be capable of minimising problems arising from computerisation, and will have a minimum of five years' experience as a Systems Analyst and at least one year's programming experience on DEC equipment

using MUMPS. The ability to write clear and concise reports is essential. Although a degree in Computer Science or Engineering would be preferred, our clients will accept an MBCS.

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Applications are forwarded to the client concerned, therefore companies in which you are not interested should be listed in a covering letter to the Confidential Reply Supervisor.

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The Company now seeks an individual whose all-round data processing experience will ensure the steady development of this essential facility. Ideally, candidates will be educated to degree level, and will have had proven experience in small installation or project development man and resource management during their career to date. It is envisaged that the successful candidate will be no older than 35, and that **relevant technical IBM experience** will ideally have been gained in the oil or petrochemical industries.

Applicants should also demonstrate those essential personal qualities necessary to ensure the continued support of the various levels and disciplines of users associated with the management of the oil industry - an environment that calls for initiative, creativity and commitment within the generation of realistic and practical ideas to support the diverse user base.

To discuss this opportunity in more detail, and to arrange an initial interview, please call Rex Ashcroft on 01 935 0671 during working hours, or Harlow (0279) 416529 evenings and weekends, or submit a detailed career resume to him at the London address below if you prefer.

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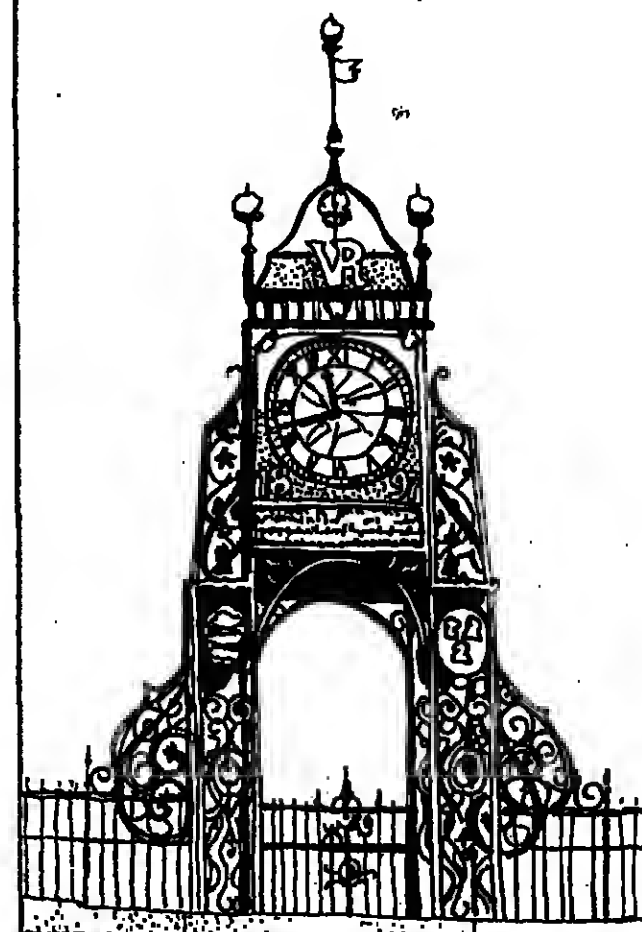
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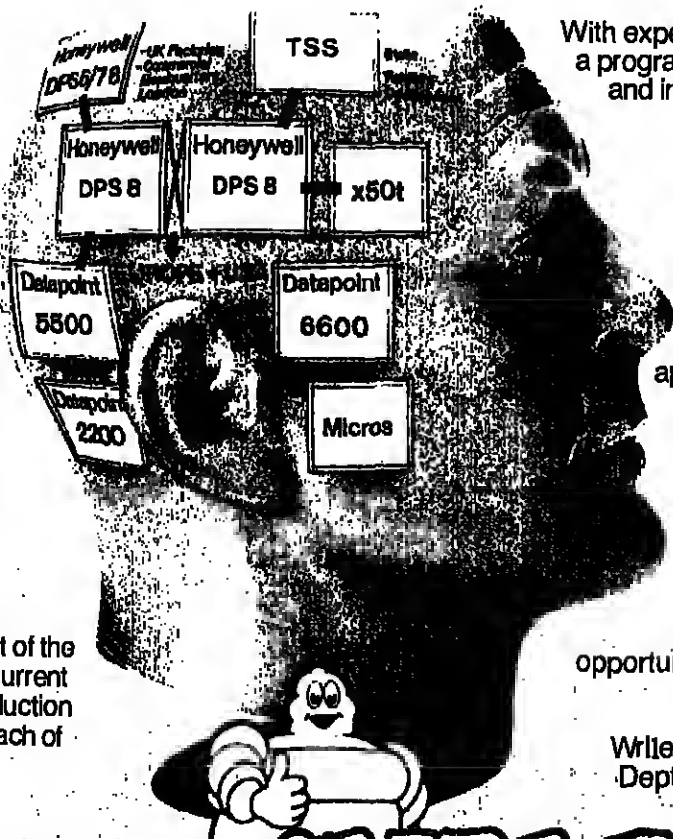
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You will be expected to establish high technical standards for quality assurance and for providing a sound computing and data communications infrastructure. Bring your degree and five years experience - three of which should be in a technical specialisation and one working on a DEC PDP 11/70 installation using RSTS/E. SR120,000 p.a. Ref. M362/01.

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Analyst Programmers c. £15,500 p.a. tax-free

The mix of work will include enhancement and modification of existing systems in the areas of administration, patient care, patient management and laboratory systems. Two years programming and systems design experience supported by a degree or other formal qualification, is the principal requirement. Ideally you will have worked in a PDP 11/70 installation operating under RSTS/E, and will have written most of your programs in BASIC PLUS. Salary SR95,500 p.a. Ref. M362/04.

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*The conversion to sterling has been effected at the rate SR6.05 = £1.
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Our client, an Engineering Systems Supplier, currently requires additional Software Designers for its headquarters in rural Hertfordshire. Suitable applicants will be graduates preferably in an engineering discipline. You should offer a minimum of 12 months post-graduate Fortran programming experience gained in a real-time mini-computer environment. Preference will be given to applicants who have had exposure to VAX/VMS or Prime based systems, but if you have a bright outgoing personality and a willingness to learn, excellent training will be provided. For the more senior positions you will be expected to offer some knowledge of Computer Aided Design or Computer Aided Engineering techniques. Ref: L26/A

Software Trainers

Central London: Salaries to £10k

The Training Division of a leading, London-based, Systems and Software House has a number of vacancies for either experienced Trainers or Software Specialists wishing to adopt a new and challenging role. Candidates should be graduates, not necessarily in a scientific discipline, and be able to communicate effectively both orally and in writing. Previous experience in a teaching or training role is preferable but by no means essential. More important is fluency in a widely used, high-level language such as Cobol or Fortran, and on appreciation of structured programming techniques. Continual exposure to the latest tools being utilised in software development is an integral part of these positions and applicants should, therefore, have the ability to quickly assimilate new, complex ideas. Ref: L26/B

Project Manager

Bucks: Salary to £15k + Car

The Buckinghamshire-based headquarters of a British Sales and Distribution Company currently requires a Project Manager. The ideal candidate will be aged 30-35 years and offer broad business experience gained within the Data Processing industry. You will probably be currently employed by a Systems and Software House or Management Consultancy, where you will have gained considerable man-management experience. Your innovative approach and personal communication skills will be of paramount importance as you will be involved in the design and development of systems for internal users. Whilst your particular hardware and software skills are not the primary requirement, there is a stated preference for applicants who are familiar with IBM mainframe hardware. Additional knowledge of a TP Monitor (e.g. Shadow, Envision, CICS) and/or Database Management System (e.g. IDMS, TOTAL, RAdMS) will attract a salary premium. Ref: L26/C

Telecomms Consultants

Central London: Salaries to £16k

A highly regarded supplier of integrated Data and Telecommunications Systems wishes to recruit several Senior Consultants for its U.K. headquarters. Ideally, candidates should have previous experience in the evaluation and selection of PBX/PLAN equipment and have actively participated in the investigation and installation of PTT Telexnet applications within multinational corporations. All respondents must demonstrate previously successful involvement in both project and budgetary control, in particular where the client has requested a total consultancy service from strategic studies, through to recommendations, on-site implementation and final acceptance. Good personal presentation skills are of paramount importance since you will be expected not only to present recommendations at board level but also to persuade antipathetic users of the viability of new developments within telecommunications. Ref: L26/D

Micro Software Development

Cambridge: Salaries to £12k

Programmers and Software Team Leaders are urgently required to assist in the development of applications and systems software for a new generation of micro-computers. Successful candidates for the positions of Team Leader will be fluent in a high-level, block structured language and have specified and implemented at least one compiler. Working in-house, their responsibilities will include the design, development and commissioning of systems software and the evaluation of commercial packages submitted by sub-contractors. Programmers will also be expected to offer fluency in a block-structured language and, preferably, have gained the majority of their post-graduate experience on micro-based systems. High standards of documentation and the ability to conform to tight deadlines are required of all respondents who, in return, will be rewarded by highly competitive salaries and a dynamic working environment. Ref: L26/E

Real-Time Systems

Benelux: Salaries to £16k

A Continental supplier of Total Systems and Software Services has a number of vacancies for Systems and Software Engineers for permanent career positions in the Benelux countries. Candidates should hold at least one numerate degree and have one year's post-graduate work experience. Systems software programming experience must include fluency in a high level language such as Pascal or RTL-2 and have a working knowledge of Assembly as a secondary skill. Applications experience should have been gained in the design and development of industrial automation, C systems or retail banking (i.e. automated tellers). A working knowledge of either Dutch or French will attract a salary premium although the Company will provide language courses. Ref: L26/F

Software Designers

Thames Valley & Wilts: Salaries to £13k

The Research & Development facility of a major supplier of office automation products and services is currently seeking a number of Software Designers. Candidates, aged 23-28 years, should have a minimum of two years' software design experience in a distributed processing environment and be fully conversant with communications protocols, layer architecture, text editing, voice communications and speech synthesis. For certain positions, you will be required to have an appreciation of both software and end-user problems particularly in circumstances where the client envisages the implementation of wide or local area networks. Additionally candidates who have man-management or project control aspirations are encouraged to apply. Ref: L26/G

Robotics

London/Herts: Salaries to £10k

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Appointments will be for three years at an annual salary of £10,000 - £10,500 per annum.

For further details, please contact:

Dr. J. H. B. Smith, Head of Department

Department of Computer Science

University of Manchester

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Manchester M13 9PL

Telephone: 061-275 3441

Telex: 940000

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CITY PROGRAMMER To £10,000

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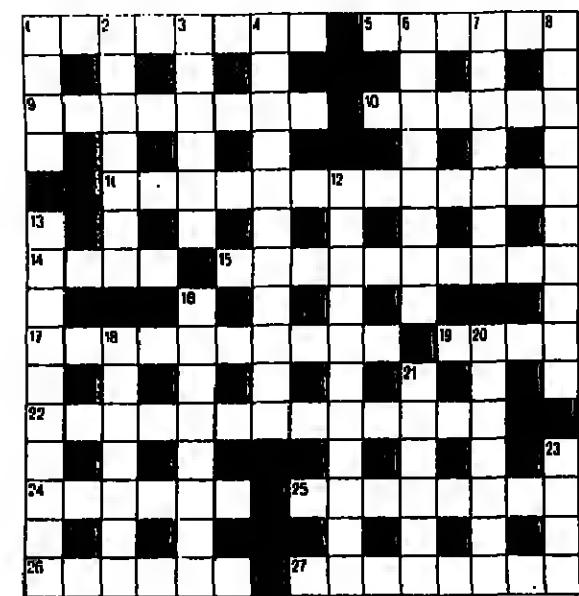
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Handwritten signature: *John R. Woodward*

CROSSWORD

Prize Crossword No 30
Compiled by Alec Robins

A prize of £10 will be awarded for the first correct entry. The second and third solutions placed will receive £5 each. Entries to Crossword Competition, Computer Weekly, Quadrant House, The Quadrant, Sutton, Surrey, SM2 5AS, by first post Friday, July 9. Please use a ballpoint pen to complete the crossword, and include a telephone number at which you can be reached during the daytime.



Name..... (Miss, Mrs, Ms, Mr)

Address.....

Telephone.....

I accept the rules and conditions of the Computer Weekly Crossword Competition.

Signed..... Date.....

ACROSS

1. A quiet couple at the cricket ground get commendation (8)
5. Society elite? That's very funny! (6)
9. Little Albert, four, caught by the hair - my goodness! (3,5)
10. Call casually for a little drink at home (4,2)
11. Where reasons for letters are discussed (8,5)
14. Beams you've to lift, by the sound of it (4)
15. Debauched chap seen in den of vice having a drunken spree (10)
17. Ought English Communist to get jostled? (10)
19. Young beast, making one cringe (4)
22. What can make toff panic? Not I, actually (2,5,2,4)
24. A man in the winter of life: Sounds like the spring (6)
25. Very hot about current affairs? That's about right (8)
26. Foreign money put inside a vegetable (6)
27. There's embracing peer, dry-eyed (8)

DOWN

1. Excellent writing intentions (4)
2. Wages lying about prison make one jittery (7)
3. Place for rearing birds caught by wildfowler young (6)
4. Promotion notice to stick round vehicle (11)
6. Small boats made by very wise man in the Civil Service (8)
7. Explain former unit of currency (7)
8. Checking what drivers are doing about turning in? (10)
12. Troops coming to the rescue, making dithery officer reel (6,5)
13. Renewing acquaintance with leader of band, hurrying forward (8,2)
16. I settle snugly after mountain climbing - that's most obvious (8)
18. Mythical musician broadcasting her opus (7)
20. An item for a leader, perhaps (7)
21. A depressing influence. Mother gets salesman upset (6)
23. Soft fabric, trimmed at the bottom, is an extra (4)

RULES AND CONDITIONS

1. Each competitor may submit no more than one entry.
2. The competition is open to all readers of Computer Weekly with the exception of the staff of IPC Business Press Ltd, any printers employed by them or the close relatives of any such staff.
3. The solution of each puzzle will normally be published in the issue three weeks after the puzzle has been published.
4. Winners will receive their prizes during the month following the competition.
5. The decision of the editor on the interpretation of the rules and conditions and on all matters shall be final. No correspondence will be entered into.

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Applications are invited from suitably qualified persons for the post of Senior Analyst/Programmer within the Administrative Data Program Section of the Faculty of Social Sciences. The successful candidate will be responsible for the design, development and maintenance of computer programs for the University's administrative data systems. The post is a full-time position and the successful candidate will be required to work in the Faculty of Social Sciences, University of Glasgow, Glasgow G3 7QA.

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Vacancies for two graduate research assistants in the above department. Work would be in the area of network measurement in both wide area and local networks. Experience with X.25 networks and/or real time systems is an advantage. The department has a very active program of research in the area of computer communications, distributed systems, and multi-media communications. Data communications within the department is provided by a number of Cambridge Rings and gateways provide access to wide area networks. A satellite ground station has been installed for interconnection of geographically separated local area networks. Applications, with cv and the names of two referees, should be sent to Professor P. T. Kirstein, by 14 July 1982, University College London, Department of Computer Science, Gower Street, London WC1E 6BT. Salary range £2085 to £2105 plus £1026 London Allowance.

Your
Computer

Your Computer, Britain's foremost home computing magazine, is looking for a programmer/journalist. Programming and writing skills are equally important but prior experience of journalism is not necessarily required. The successful candidate will have:

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- ★ First-hand knowledge of personal computers
- ★ The ability to write clear English

Send a CV and examples of your written work to the Publishing Director, Your Computer, Room H309, Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS.

The post carries a salary of £7014 per annum (subject to annual review now being negotiated).

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The successful candidate (male or female) will devise, develop and commission structured software systems in both high and low level languages for micro processor and mini computer controlled scientific/analytical equipment.

In addition you should be able to maintain and enhance micro processor development facilities, identify and rectify problems in hardware/software configurations and be aware of potential areas for future development.

We currently use T116-bit 9900 series microprocessor hardware, together with the Hewlett-Packard range of BASIC desk top computers and are progressively using micro-electronics to automate our products.

Applicants should be aged 24+, with a science based degree and will have at least 2 years experience of software development for scientific or control applications on small machines in low level languages. You should be used to working with minimum supervision and industrial experience in a company in the instrumentation field would be advantageous.

This is a full position offering a salary in the range £6000-£8000 pa plus an excellent benefits package including 24 days rising to 30 days holiday, flexitime, excellent working conditions on a new purpose built site, contributory life insurance and pension schemes and relocation assistance to this pleasant part of rural Cheshire.

If you feel you have the expertise and enthusiasm to make an immediate contribution to this important role please write with full career details to: Clive Workman, Electronics Design Manager, VG Isogas Limited, Aston Way, Middlewich, Cheshire CW10 0HT. Tel No. (060684) 5151

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Probably in your mid to late twenties, and qualified to at least 'A' level standard, you will need a minimum of one year's experience in RPG II, preferably on System 34, in a batch/on line environment.

The key responsibilities of the position will include designing, writing and documenting computer programs to meet system specifications; preparing test data and files for program testing; and liaising with Systems Analysts on the design of computer procedures.

For the right person, career prospects in this growing company are excellent. In addition, an attractive salary will be supported by a generous range of personal benefits including 25 days' annual holiday, contributory pension and free life assurance schemes.

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Dreamland Group,
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101101

Project Co-ordinator -
Computer Networking

There is a vacancy for a Principal Scientific Officer to work at Rutherford Appleton Laboratory as Co-ordinator of Project UNIVERSE. The participating organisations are British Telecom, the Department of Industry, GEC Ltd, Logica Ltd, and the Science and Engineering Research Council which is also supporting work at 3 universities. Project UNIVERSE aims to research the interconnection of numbers of geographically separated Local Area Networks into a comprehensive Wide Area Network via 1 Megabit per second links to the existing Orbital Test Satellites and high speed terrestrial links. When fully operational in the second half of this year, in excess of 150 computing devices spread over 7 sites in the UK will be coupled into the UNIVERSE network and a schedule of experiments performed.

The successful candidate will be responsible for co-ordinating the technical activities of the teams at the 7 sites, helping to mould these into a coherent overall experimental programme. The responsibility will extend to advising the participating organisations on general overall progress, on future options for extending the project in both scope and time, and on ways in which the project can influence, and be influenced by, emerging international standards in networking.

Applicants should have a good honours degree in an appropriate engineering or science subject and at least 5 to 10 years' experience relevant to the position offered. Experience of working with national or international standard bodies would be especially appropriate. A three year fixed term appointment is envisaged, but an appointment to the permanent staff of the Science and Engineering Research Council at Principal Scientific Officer level is not excluded.

The salary scale is:

Principal Scientific Officer £20,892 to £24,289

Some assistance with expenses incurred in house sale/purchase may be available.

For an application form please write to or telephone: Recruitment Office, Personnel Group, Science and Engineering Research Council, B.A.L. Chilton, Didcot, Oxon OX11 0QX. Tel: Abingdon (0235) 21900 Ext. 610 quoting Ref. VN 063.

Closing date for applications: 20th July, 1982.

101111



Rutherford Appleton Laboratory

NatWest Jobs

Data Processing
Support Staff

National Westminster Bank offers opportunities to join a team which supports computer systems run on the latest IBM hardware (3081) in an MVS-SP, IMS environment.

We have a limited number of vacancies in our Operations Technical Support Group at our London Computer Centre, Abie Street, near Aldgate, where our installation is currently servicing a large number of systems including an extensive teleprocessing network.

Applications are invited from candidates who have experience in JCL, Utilities and software related to high technology equipment, together with proven skills in the implementation of new systems.

Dependent upon experience, a salary in the region of £7,580 including London allowances is envisaged, together with an attractive range of top company fringe benefits.

To find out more please write for application form to Miss J. Cules, National Westminster Bank PLC, Recruitment Shop, P.O. Box 165, Heron House, 325 High Holborn, London WC1.

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BROOK MARKETING SERVICES

SENIOR SYSTEMS ANALYST

Juega un papel importante en los sistemas de informacion

Milton Bradley, one of the world's leading multi-national manufacturers and distributors of games, toys and puzzles with a \$400 million turnover world-wide believe strongly in the use of computerised information systems as a vital aid to business efficiency.

Using an IBM 3033 main frame in the U.S.A., 8 local series 1's and 3 system 32's in Western Europe, COBOL and a recently installed IDMS data base system, the successful candidate, male or female, aged between 28-35, will initially assume responsibility for the development of Spanish systems from system 32 RPG to series 1 and 3033 COBOL. After a 6/8 week period in London this will necessitate several visits in Valencia of up to 2 weeks duration over the next 6/9 months. Fluent Spanish is a prerequisite as the task will involve all the functional areas, from feasibility to implementation at Milton Bradley España.

Reporting to the Director of Management Information Systems, the selected applicant will have proven experience in a similar multi-national environment. Preference will be given to candidates who are prepared to be extremely mobile as the job will entail the design and implementation of manufacturing & marketing systems throughout Europe, after the completion of the Spanish project.

The position is not on a contract basis and the salary, benefits package and career progression opportunities are those normally associated with a major employer.

Please telephone or write for an application form to: Tina Huczek, Personnel Officer, Milton Bradley Limited, CP House, 97/107 Uxbridge Road, London W5 5TZ. Telephone 01-567 3030.

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Department of Computer Studies and Mathematics

SENIOR LECTURER/LECTURER 11

Computer/Information Systems Ref. ACA/480

The principal degree and diploma courses within the Department involve major studies of applications of computers in Business, Industry and public authorities.

Applicants should have appropriate practical experience of computer-based information systems in areas such as applications/systems programming and systems design/analysis. A good Honours Degree and/or MSc is essential.

Brief are expected to undertake activities, including research, in addition to teaching duties.

Salary: £1,012-£11,864 (B2) £12,814-£14,688-£11,023

Further details and application forms are available from the Personnel Officer, The Polytechnic, Quadrant House, 1000, 1001, 1002, 1003, 1004, 1005, 1006, 1007, 1008, 1009, 1010, 1011, 1012, 1013, 1014, 1015, 1016, 1017, 1018, 1019, 1020, 1021, 1022, 1023, 1024, 1025, 1026, 1027, 1028, 1029, 1030, 1031, 1032, 1033, 1034, 1035, 1036, 1037, 1038, 1039, 1040, 1041, 1042, 1043, 1044, 1045, 1046, 1047, 1048, 1049, 1050, 1051, 1052, 1053, 1054, 1055, 1056, 1057, 1058, 1059, 1060, 1061, 1062, 1063, 1064, 1065, 1066, 1067, 1068, 1069, 1070, 1071, 1072, 1073, 1074, 1075, 1076, 1077, 1078, 1079, 1080, 1081, 1082, 1083, 1084, 1085, 1086, 1087, 1088, 1089, 1090, 1091, 1092, 1093, 1094, 1095, 1096, 1097, 1098, 1099, 1100, 1101, 1102, 1103, 1104, 1105, 1106, 1107, 1108, 1109, 1110, 1111, 1112, 1113, 1114, 1115, 1116, 1117, 1118, 1119, 1120, 1121, 1122, 1123, 1124, 1125, 1126, 1127, 1128, 1129, 1130, 1131, 1132, 1133, 1134, 1135, 1136, 1137, 1138, 1139, 1140, 1141, 1142, 1143, 1144, 1145, 1146, 1147, 1148, 1149, 1150, 1151, 1152, 1153, 1154, 1155, 1156, 1157, 1158, 1159, 1160, 1161, 1162, 1163, 1164, 1165, 1166, 1167, 1168, 1169, 1170, 1171, 1172, 1173, 1174, 1175, 1176, 1177, 1178, 1179, 1180, 1181, 1182, 1183, 1184, 1185, 1186, 1187, 1188, 1189, 1190, 1191, 1192, 1193, 1194, 1195, 1196, 1197, 1198, 1199, 1200, 1201, 1202, 1203, 1204, 1205, 1206, 1207, 1208, 1209, 1210, 1211, 1212, 1213, 1214, 1215, 1216, 1217, 1218, 1219, 1220, 1221, 1222, 1223, 1224, 1225, 1226, 1227, 1228, 1229, 1230, 1231, 1232, 1233, 1234, 1235, 1236, 1237, 1238, 1239, 1240, 1241, 1242, 1243, 1244, 1245, 1246, 1247, 1248, 1249, 1250, 1251, 1252, 1253, 1254, 1255, 1256, 1257, 1258, 1259, 1260, 1261, 1262, 1263, 1264, 1265, 1266, 1267, 1268, 1269, 1270, 1271, 1272, 1273, 1274, 1275, 1276, 1277, 1278, 1279, 1280, 1281, 1282, 1283, 1284, 1285, 1286, 1287, 1288, 1289, 1290, 1291, 1292, 1293, 1294, 1295, 1296, 1297, 1298, 1299, 1300, 1301, 1302, 1303, 1304, 1305, 1306, 1307, 1308, 1309, 1310, 1311, 1312, 1313, 1314, 1315, 1316, 1317, 1318, 1319, 1320, 1321, 1322, 1323, 1324, 1325, 1326, 1327, 1328, 1329, 1330, 1331, 1332, 1333, 1334, 1335, 1336, 1337, 1338, 1339, 1340, 1341, 1342,

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COMMUNICATIONS CONSULTANT

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This leading software organisation requires a Consultant with up to a decade of experience in network planning, dimension and equipment, and message switching, preferably System X25. The successful applicant should also have a good working knowledge of the design and implementation of data communications, software, and associated security. Ref: C9210

TECHNICAL SUPPORT MANAGER

£15,000

Our client, based in London, is a well-known commercial organisation with a large investment in the development of online systems. This company is currently seeking a Technical Support Manager to take charge of a small team of specialists, whose functions include software programming, network and database control. The successful applicant must have a CICS or SHADOW background with systems programming using BASIC ASSEMBLER language plus any high level language experience. This position would ideally suit someone wishing to take the next step into management, and at the same time maintaining technical competence. Ref: C9192

SYSTEMS INSTRUCTOR

HERTS

to £15,000

Our client is continuing to expand its business, and as a consequence has a fast-growing data processing complex. In order to maintain the high standards of its internal training facilities, the company needs a talented instructor with at least seven years' systems and COBOL programming experience, together with a working knowledge of large IBM systems using IMS. Ref: C9208

RPG 2/3 PROGRAMMERS to SYSTEMS CONSULTANTS

to £15,000

A number of our clients situated in London/Homes Counties and South East England are seeking Programmers and Analysts with 2-3 years' RPG experience, preferably on System/34 and/or System/38 equipment, capable of working on their own initiative. Applications include the specification, design and implementation of a wide variety of commercial systems. Ref: B9187

ANALYST/PROGRAMMER

HERTS

to £14,300

This large organisation is currently seeking an Analyst/Programmer with a minimum of 3 years' COBOL, CICS together with 12 months' design experience, preferably in a DOS/VS environment, using database facilities. There is considerable scope to progress in this rapidly expanding business. Ref: C9201

ANALYSTS to PROJECT LEADER level

to £14,000 + benefits

Three of our clients situated in Middlesex, London and Kent Coast, with commitments to developing online systems, are seeking development staff at all levels. The successful applicants will have at least 2 years' programming experience in COBOL, or PL1 together with a proven track record in systems development in Insurance, Banking or other financial applications. A knowledge of CICS would be an added advantage. Benefits include bonus and profit sharing. Ref: A9041

SENIOR SYSTEMS ANALYST

£13,500 + profit share

This London-based financial organisation needs someone with at least 2 years' design experience to take an important role in the development of their applications. Previous online experience is essential, together with a good understanding of database concepts. A knowledge of CICS and/or IMS would be ideal. Ref: C9081

BUSINESS ANALYST

MIDDX

£ Market+

Our client is a major computer user, and is currently creating a new division to handle the marketing of new products. As a consequence, the company needs a Business Analyst with at least 2 years' sound systems experience coupled with a programming background. This is an ideal opportunity to take a lead in development of a wide range of applications using a variety of software aids and hardware tools. Ref: C9085

RESEARCH ANALYST

to £13,500

Our client is seeking someone with specialist skills to undertake a consultancy role in the investigation of hardware and software facilities, and assess its suitability to the Group. The job entails a wide range of activities including communication with suppliers and users, preparing findings and recommendations, pre- and post-installation of products, education and support. The successful applicant must possess a wide variety of technical skills, together with a broad perspective and good business sense. Ref: C9218

CHIEF PROGRAMMER

SUSSEX COAST

£12,000

This company requires someone with a strong IBM COBOL and/or ASSEMBLER experience to take charge of their team of Programmers in a CICS/PL1 environment. This position offers great opportunities, accompanied by excellent salary and fringe benefits. Ref: A9051

PROGRAMMERS to SYSTEMS ANALYSTS

SUSSEX

to £12,000

This Crawley-based company offers excellent prospects to those COBOL Programmers and Systems Analysts who wish to enhance their technical skills. Excellent fringe benefits. Ref: A9045

ANALYSTS & PROGRAMMERS

KANTS

to £12,000+

This major company is undergoing development of new online systems and is seeking Analysts with at least 12 months' in-system design, preferably with an insurance or financial background. Vacancies also exist for Programmers with 2 years' COBOL experience. Benefits include profit sharing and annual bonus. Excellent prospects. Ref: C9185

TEAM LEADER

HERTS

£11,500

Our client, a well-known manufacturing organisation, requires someone with supervisory skills to take charge of their small team of Analysts and Programmers in a DME 2 environment. The successful candidate must have a sound systems and COBOL programming background, together with a good understanding of ICL 1800 or 2903/2904. Ref: C9146

PL1 and COBOL PROGRAMMERS

to £11,500 + benefits

A number of our clients situated in London, the Home Counties, and S.E. England, need Programmers with a minimum of 2 years' PL1 or COBOL experience for the development of real-time systems. A knowledge of CICS and DL1 would be an advantage. One of our clients is also seeking a Junior Programmer with at least 6 months' commercial experience in PL1, where there is a prospect of moving later into analysis. Ref: B9102

DATABASE SPECIALIST

LONDON

to £11,500

Our client is seeking to complement its Technical Support Team with a specialist responsible for database design, the monitoring of program development to ensure their efficient use, and performance tuning of operational systems. This successful applicant will have sound experience of database design, and a good understanding of CICS in an MVS environment is desirable. Ref: C9217

TEAM LEADER PROGRAMMER

£11,000 + Bonus

£9,000 + Bonus

Our clients, an international leisure company situated in London, are seeking a Team Leader with a minimum of 3 years' IBM COBOL experience and a good working knowledge of CICS, to lead a team of 4 Programmers, also a Programmer with a minimum of 18 months' IBM COBOL preferably with CICS experience. Both positions offer long term security and excellent salaries, conditions and benefits. Ref: B9079

CHIEF PROGRAMMER

£11,000 (early review)

Our clients, a large commercial industry in Middlesex, are seeking someone with several years' IBM COBOL experience ideally gained in an OS environment. Knowledge of CICS, TOTAL and ROSCOE would be useful, together with good supervisory skills. Amongst many excellent benefits offered are free BUPA, relocation where applicable. Ref: A9082

SYSTEMS INSTRUCTORS

LONDON

£11,000

This well-known organisation, highly skilled in the training of all levels of development personnel, is seeking two talented Analysts with communicative skills, to impart the knowledge, techniques and disciplines of Systems Analysis. A programming background is also an important attribute for this challenging and responsible position. Ref: C9078

ANALYST/PROGRAMMERS

MIDDX

£ Market

This company is in the process of creating a new section to handle the development of a wide variety of bespoke systems. Computer professionals are needed with 2-3 years' COBOL, BAL or PL1, together with some systems experience where this has involved a fair degree of user contact. Excellent prospects. Ref: C9212

PROGRAMMERS

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Major Software House has a requirement for Programmers with 3 years' COBOL experience to work on various client projects. The successful applicants must have a good understanding of ICL 1900/2900 system software, or HONEYWELL GCOS, TDS, DMLV. Generous overseas allowances given where applicable. Ref: C9103

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This major Software House is currently seeking Systems Designers with HEWLETT PACKARD 3000 experience, to specify and develop commercial systems for various clients. An ideal opportunity to consolidate your experience and widen your hardware/software base with a progressive organisation. Ref: C9111

FORTRAN SPECIALISTS LONDON/HOME COUNTIES

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Programmers are required to join existing development teams to work on a variety of applications including scientific research, engineering and commercial projects. Good fringe benefits. Ref: C9211

PROGRAMMERS AND ANALYSTS

£8,000-£11,000

Our client is currently looking for several Programmers and Analysts with a sound COBOL programming background, preferably using BURROUGHS equipment. The successful applicants will be involved in the development of a number of commercial online applications using the latest equipment and systems software. Ref: C9215

LECTURER

MIDDX

£10,500

This major manufacturing company needs someone with experience in FORTRAN and/or COBOL to take responsibility for teaching their graduates within the Group, using DEC/VAX and other equipment. The successful candidate will probably be educated to HNC or HND level. Excellent scope and prospects for this demanding position. Ref: C9188

PROGRAMMER/ANALYSTS

to £10,500 + Profit Share

Our client based in London, is seeking two Programmers with at least 2 years' solid COBOL experience to work on the development of online/database financial applications. These positions would ideally suit those wishing to put their theoretical systems knowledge into practical use. Ref: C9189

ICL PROGRAMMERS

SUSSEX

to £10,500

Our client, based in Crawley, is expanding its development teams, and as a consequence needs Programmers with at least 18 months' ICL COBOL experience. A knowledge of VME/B or VME/K would be useful. Ref: A9198

ANALYST/PROGRAMMER

MIDDX/LONDON

to £10,500

This large organisation requires someone with an IBM COBOL programming background to assist in the development of their online systems. Systems software training will be given, where necessary, in a progressive environment. Ref: C9108

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REF. B: 01-794 5937

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An experienced Computer Professional is required for this new post. Responsibilities will include the operational management of a new Mini installation in the Finance Department and the provision of technical advice to line managers. An internal Working Party is co-ordinating development of Data Processing throughout the authority, which has two Mini Computers, several word processors, and a number of bureau arrangements, and the Computer Officer will provide the technical input to this Working Party.

The successful applicant will need to have had Programming/Analysis experience with commercial applications and a sound knowledge of existing equipment. He/she will be expected to make a substantial contribution to the enhancement of existing systems and have an ability to communicate with users of all levels.

This post is located in the Old Marylebone Road, NW1, convenient for Edgware Rd., Paddington, Baker St., and Marble Arch Stations. But written applications should be sent to:

Mrs. Linda Taylor, Personnel Officer

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This is a senior appointment in the Computer Team, which is responsible for the development and introduction of computer applications in the County Constabulary.

Preferably educated to degree or final professional level, applicants should have practical experience of programming and at least five years' experience of systems analysis and design, ideally in a local government environment. Management experience is desirable and the ability to communicate effectively at all levels is essential.

Essential user car allowance payable.

Application form returnable by 21 July from the Personnel Officer, Kent County Constabulary, Sutton Road, Maidstone, phone (0622) 85432, ext. 212.

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SALES BIT

Quality of management — 16

When you're stretched to the limit

I KNOW a general manager of a large international computer services company who tears small pieces of skin from his lips. I know a technical director of a software house who brushes the end of his nose at least once every 30 seconds when engaged in any kind of heavy discussion. I know a national sales manager who constantly twists his hair into small spirals. I know a managing director of a turnkey systems house who went home one night in a depressed state and suddenly proceeded to break up the furniture.

These may appear to be mild eccentricities, but in reality they are outward manifestations of nervous tension — people operating at the limit of their emotional tolerance. So, when the managing director walks into your office and tells you that "You'd better damn well make sales target this quarter or you're on your bike", your heart pounds a bit, your hands probably sweat and your muscles go tense.

It is an absolutely natural process. You are all prepared to attack or be attacked. Unfortunately, your sympathetic nervous system will only accept that its actions are inappropriate after the event. Clearly, some people are more able than others to cope with stress, but this is purely a matter of degree. It is not as simple as there being people who don't worry and people who do. Everyone has an emotional threshold and there is always a circumstance somewhere able to overspill it.

Perhaps more so than any other management function, the sales manager is subject to continuing pressure. There always exists that monthly, weekly or even daily ritual of comparing what has been achieved with what was planned. The worse the numbers, the higher the pressure to do better.

It can be a considerable strain to cope with not only the task of higher achievement but also carry the burden of implied inadequacy. Stress in moderation is a great motivator. Too much stress has quite the reverse effect to the point of being totally destructive. No manager can afford to disregard his existence, ignore his negative potential or assume himself to be immune from its effect.

More next week.

Alan Williams

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